THE RUBBER AGE

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INDEX TO CONTENTS

The New Process for Vulcanizing Rubber	141	Rubber Industry Statistics	155
Labor Statistics	142	The Rubber Situation	156
Industrial Sanitation	143	Exports of Rubber for September	158
Exports of Italian Rubber Goods	145	Opportunities for Export Connections	158
The Making of a Tire's Most Essential Requirement—Fabric	146	Rubber Imports for October	158
The Rubber Industry in Bolivia	147	MARKETS	
The Outlook for the Industry	151	Manufactured Rubber Goods	159
Tire Prices Reduced	151	Cottons, Yarns and Fabrics	159
Akron Stock Prices	152	Chemicals and Compounding Materials	160
New Mason Appointments	153	Crude Rubber	161
International Personnel Changes	153	Scrap Rubber	162
United States Makes Important Changes	154	American Rubber Patents	162

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The New Process for Vulcanizing Rubber

By S. J. Peachey, M.Sc. Tech., F.I.C.

In the following article the case for the new cold cure process is presented by the author (its discoverer.) Briefly the new process consists in exposing rubber, alone or in admixture with practically any useful filling agent or pigment, successively to the action of two gases, viz., sulphur dioxide and hydrogen sulphide. The gases diffuse into the rubber and there interacting produce a particularly active form of sulphur, which is capable of combining with and vulcanizing the rubber, even at the ordinary temperature. The reaction presumably (says the author in a previous communication) takes place according to the equation:— $2H_2S + SO_2 = 2H_2O + 3S$.

The conversion of raw rubber into the vulcanized material may be regarded as by far the most important of the numerous operations which are comprised in the manufacture of rubber goods. Although it endows the material with an entirely new set of properties, the change itself is essentially a chemical one, and is brought about by purely chemical means. The value of the vulcanization process lies in the fact that it converts the raw rubber, which from the manufacturer's point of view possesses many undesirable qualities, into a superior although still closely related product, which on account of its unique properties finds innumerable applications in the industries.

The Original Process

The original process for effecting vulcanization consisted in intimately mixing the raw rubber with a certain proportion of sulphur and heating the mixture to a temperature of 140 degrees C. for a suitable period of time, which varied with the amount of sulphur used. Under these conditions the rubber which in its raw state is self-adhesive, sensitive to temperature changes, soluble in numerous solvents and none too durable, becomes converted into a highly-elastic, non-adhesive, insoluble material possessing greatly enhanced strength and durability. Investigations have proved that the change as already stated is a chemical one, the sulphur combining with the rubber to form an addition compound, in which the physical and mechanical properties of the raw rubber are modified in the manner described.

Some years after the discovery of the "hot vulcanization" process Parkes (1846) patented the use of chloride of sulphur as a vulcanizing agent. This investigator showed that rubber could be effectively although only superficially cured by immersion in a weak solution of sulphur monochloride in a suitable solvent, preferably carbon bisulphide. The vulcanization takes place rapidly, a few seconds' immersion being sufficient, and no heat is required. On the other hand, there is little penetration, and consequently the process is only adapted to the treatment of thin sheet goods and rubbered fabrics.

In this case the reagent combines bodily with the rubber, forming a sulphur chloride addition compound, that is to say, in addition to sulphur an equivalent amount of chlorine becomes attached to the rubber molecule, and it must be admitted that in certain respects the product is inferior to that obtained by the hot vulcanization process. It is not difficult indeed to simulate the effects of the hot sulphur cure by treating rubber in the cold with various reagents, but in no case does the product possess the strength or the durability of the true rubber sulphur compound. Chlorine, for example, in dilute aqueous solution will produce an effect on the surface of rubber which quite closely resembles vulcanization, and aqueous solutions of hypochlorous acid yield a similar result. Mild oxidizing agents, such as the nitro-derivations of benzene and allied hydrocarbons, have been suggested by Ostromyslenski as vulcanizing agents, but the chlorinated and the oxidized rubbers produced by such methods, although they possess certain of the minor characteristics of a sulphurized rubber, cannot be regarded as vulcanized in the true and original sense of the term. It would appear in fact, that of all the elements which are capable of combining directly with rubber, sulphur alone yields a product possessing a high degree of strength, distensibility and durability—the combination of properties which has made vulcanized rubber invaluable in industry. Taking these facts into consideration, it will readily be understood that as far as general rubber manufacture is concerned the hot vulcanization process is by far the most widely used, and the most satisfactory method of vulcanization, Parkes' process ("cold cure") being limited in its application to the manufacture of proofed fabrics and a few sheet rubber specialities.

Disadvantages of Hot Vulcanization

The hot vulcanization process itself, however, is not free from disadvantages, the chief being:—

(1) The continuous use of steam, both as a heating agent and as a medium for exerting pressure on the goods under treatment—the latter being necessary in order to avoid the development of porosity.

(2) The comparative slowness of the process.

(3) The restrictions imposed on the manufacturer in his choice of filling and coloring agents, the great majority of which, if of an organic nature, are destroyed or partly destroyed at the vulcanizing temperature, especially in the presence of sulphur.

The last of these drawbacks is shared by the Parkes' process, in that sulphur chloride, even at the ordinary temperature, acts as a destructive agent toward most of the organic coloring and filling materials.

An entirely new process for effecting the vulcanization of rubber has recently become available, as the result of the writer's discovery that by exposing rubber alternately to the action of two gases, viz., sulphur dioxide and hydrogen sulphide, it becomes rapidly and completely cured, even at the ordinary temperature. The gases diffuse into the rubber and interacting therein produce a particularly active form of sulphur (probably atomic) which combines at once with the

The India Rubber Journal, London, England

rubber producing vulcanization. The process appears to be of fundamental importance for the following reasons:—

(1) It is a true *sulphur* vulcanization—as distinct from the *sulphur chloride treatment*—and yields a product entirely comparable with that obtained by the Goodyear process.

(2) It eliminates the use of heat, and to a great extent the use of mechanical pressure.

(3) It employs two gases, both of which can be produced on a large scale at a very cheap rate.

(4) It is rapid in action.

(5) It enables the manufacturer to employ organic filling agents such as sawdust, wood flour, leather buffings and shavings, cotton and shoddy wastes, and the like, which cannot be used in conjunction with the hot process owing to the fact that such materials are either decomposed, or are seriously deteriorated by contact with sulphur at the temperature employed, and in some cases by the heat alone. In this manner a number of cheap and highly durable materials may be fabricated from the various wastes—the added rubber acting as an ideal binding agent when cured by the process—and employed as floor and wall coverings, for boot and shoe manufacture, and for fancy leather goods and upholstery work.

(6) Coal tar dyestuffs and even natural dyes which, with very few exceptions, are destroyed by the "hot cure," can be safely introduced into rubber mixings which are to be cured by the new process, with the production of delicately tinted materials hitherto quite unobtainable.

Extreme Simplicity

The process has the advantage of extreme simplicity and its translation from the laboratory to the works should prove a very simple matter. In the case of floor coverings, for example, the mixing and calendering operations are carried out in exactly the same manner as they are in the rubber factory today, and identical machinery is employed. The product, sheeted out to the required width and thickness, is then passed successively through two chambers of simple construction, the one being fed continuously with sulphur dioxide and the other with hydrogen sulphide. The whole process is continuous and under perfect control, the speed of travel being the only factor which need be taken into consideration in order to produce the desired degree of vulcanization. From start to finish the operation of manufacturing an excellent floor covering, having the appearance and durability of the best linoleum, occupies just over one hour, whereas the manufacture of linoleum itself takes some six weeks in the case of the best qualities. Already a large number of samples of daintily colored floor and wall coverings, fancy leathers, hat felts, and other articles, have been produced with an appearance, finish and durability which it would be difficult to improve upon. Boots have been soled and heeled with leather re-formed from waste buffings by the new process, and the practical test of several months' hard wear has clearly shown that the re-formed leather is even more durable than the real article.

Vulcanization of Rubber in Solution

The process can be extended to the vulcanization of rubber in solution. If a solution of rubber in benzol or naptha be saturated or partly saturated with hydrogen sulphide and mixed with a solution of sulphur dioxide in the same solvent, the liquid sets in a few moments to a stiff jelly, and, on eliminating the solvent by evaporation a fully vulcanized rubber is obtained. The use of the mixed solutions for producing perfectly vulcanized seams and joints has proved highly successful, and inner tubes repaired by the new process have an excellent life. Further, by the aid of the solution process re-formed leather soles and heels may be attached to boots without the aid of stitching or riveting, and indeed a whole boot may be built up and vulcanized by the new process without a single stitch or rivet being necessary.

Both leather and re-formed leather may be attached firmly to canvas or to rubber and new developments in the belting industry and tire treading are likely to take place in the near future.

The above-mentioned applications of the new process have been fully worked out in the laboratory, but they do not exhaust a fraction of its possibilities, and new technical effects in many other directions are continuelly suggesting themselves.

Labor Statistics

The following data compiled by the National Industrial Conference Board, with respect to overtime rates in various industries September, 1914, may be of interest:—

In the course of the Board's investigation on "Experience with a Work Week of Forty-eight Hours or Less," which is shortly to be issued, the Conference Board has made inquiry as to the overtime rate, if any, that has been in effect.

Result of Invesigation

In all, 321 establishments, employing 209,656 persons, have reported their overtime rates; of these, 211 or about two-thirds, state that they pay time and a half for overtime. Forty-one report that they pay regular time for such over-time as is worked; twenty report that they have rates varying from one and one-tenth to one and one-third times the regular rate; eleven pay double time for overtime, and one double time and a half. In addition, thirty-seven establishments report that they pay different rates ranging from regular to double time, depending on the amount of overtime worked, the nature of the work, the importance of the work done, and whether the work necessitates working on a holiday or Sunday.

In the cotton manufacturing industry, twenty-one of the thirty-eight establishments reporting, state that they pay time and one-half; two pay at regular rate and the balance at rates ranging from one and one-tenth to double time.

In the wool manufacturing industry, thirty of the fifty-one establishments reporting, pay time and a half; nine pay at regular time, and the balance pay at rates ranging from time and one-tenth to time and one-quarter.

In silk manufacturing, five of the six plants who gave information, pay time and one-half; the sixth establishment reports that it has no regular scale.

In the boot and shoe manufacturing, twenty-one of the thirty-nine establishments pay time and one-half; fourteen pay regular time and four pay double time.

Sixty-nine of the ninety-seven metal manufacturing establishments pay time and a half; five pay regular time and twenty-three pay at rates ranging from time and one-third to double time.

In paper manufacturing, the majority—nineteen out of thirty—pay time and one-half; three pay regular time, five double time and three either time and a half or double, depending on when the overtime is worked.

Miscellaneous Manufactures

In a miscellaneous group, covering sixty establishments in the knit goods, jute, rubber, clothing, dyeing, furniture, candy, paint, chemical, lumber, leather, printing, and insulated wire manufacturing industries, forty-six report that they pay time and one-half; eight pay regular time, one time and one-sixth, two time and a quarter, and three either time and a half or double time.

In addition to the 321 establishments that reported on overtime rates, ninety-eight establishments stated that they work no overtime, and this is due, in some instances, to objection by trade unions to overtime work, in other cases to objections of the workmen to overtime, and in other cases, to statutory prohibition or other causes. Forty of these ninety-eight establishments manufacture boots and shoes; many of these report that they do not work overtime because of trade union opposition.

Industrial Sanitation

By W. N. Fitch

Director Accident Prevention and Sanitation, B. F. Goodrich Co., Akron, Ohio

To many, sanitation may seem to be a new word but history carries the word "sanitation" back to the time of Moses, who along with many other honors was recorded as being the first sanitarian. Agrippa in Caesar's time in the year 27 B. C. built the pantheon, called the All Holy Place, which was a wonderful structure of Roman art and contained the splendid baths in which the Romans took such delight. One of the characteristics of the ancient sanctuaries of the old churches of Rome was the provision for bathing accomodations for the weary pilgrim.

So down through the ages the various angles of sanitation have progressed but only within the last few years has industrial sanitation been given any consideration by the employer. As a result of investigation by progressive employers, the safety first movement was inaugurated and this was the first step to improve the working conditions of the workmen. Then paralleling it came the sanitation movement.

Employers, recognizing the economic side of sanitation as applied to industry, have taken the lead and made great progress toward improving working conditions, not waiting for the representative boards of health, state factory inspectors and commissioners of labor to secure legislation to force better sanitary conditions. Those who have given sanitation consideration realize how much workmen are affected in their health, habits, personal appearance and efficiency by the environments under which they work.

In passing through our industrial centers we have only to gaze upon the manufacturing buildings of yesterday and those of today to appreciate the fact that industrial architects are giving important consideration to the two great problems confronting the working conditions of employes in industry—safety and sanitation.

It is the purpose in this paper to discuss some of the important items necessary to good industrial sanitation and which can be applied not only to new construction but to old construction by making changes and repairs.

General Cleanliness

There is probably no type of factory sanitation which is so much neglected as general cleanliness. Industrial managers are just beginning to understand the economic values resulting from proper cleansing of the floors, walls, ceilings, light fixtures and machinery. To maintain a pure air supply, both artificial and local ventilation are now being applied to units which produce large quantities of dust, thus eliminating the particles of dust flying and settling about the room and impairing the health of employes.

Two prime essentials in the efficient operation of any plant are sufficient light and pure air—clear of dust or poisonous vapors.

Light and cleanliness are to some extent interdependent, for however good the first installation may be, if layers of dust are allowed to accumulate on fixtures and windows as well as walls and ceilings which act as reflectors, the lighting standard will be greatly lowered. Then, the dark shop while not necessarily dirty is usually so. Dark, uncleanly surroundings have a noticeably depressing effect on the cheerfulness and morale of the employe, a fact clearly recognized by physicians and hospital superintendents.

The broom and brush formerly used almost entirely as a medium of cleaning the floors and benches, are fast being relegated by progressive employers to the museums as relics of the past, while the up-to-the-minute manufacturer turns to new and improved methods. The large and progressive ventilating and vacuum manufacturers, who have made it possible for the housewife to clean carpets, rooms, walls and upholstered furniture with less physical effort and more efficient results by eliminating of flying dust, realize the possibilities of cleaning industrial plants by a similar method.

Address delivered at meeting of Rubber Section, Ninth Annual Safety Congress, held at Milwaukee, Wis., Sept. 29.-Oct. 1, 1920.

It is true that vacuum cleaning has been used for a number of years on specialized processes but it is only within the last year or two that real efficient vacuum equipment has been introduced to the industries and today industries are having an opportunity of trying out portable machines of large units.

One of the foremost industrial plants has for several months had a machine on trial. The room in which the machine is located has been painted white and a complete test is being

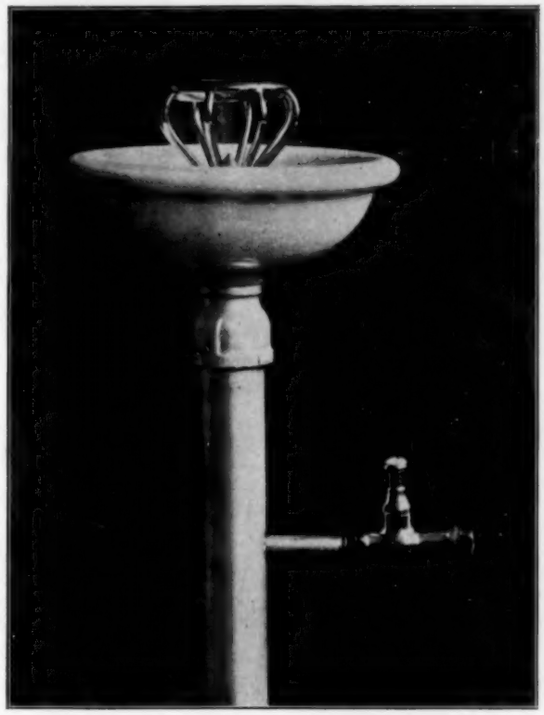

FIG. 1. SANITARY DRINKING FOUNT

made both as to the efficiency and the economic value of vacuum cleaning of floors, walls, pipes and machinery as against the old broom and brush method. Observations taken so far show that the floors are not only being cleaned but the dust is being absorbed instead of stirred into the air. The dust is being sucked from the cracks. As a result no dust is circulated into the air, therefore ,the walls, ceilings and pipes remain comparatively clean. Furthermore, it appears that the operation of the layout is much more economical than the broom and brush method.

Industry has only to be patient and cooperate with the vacuum cleaning manufacturers in their efforts to work out the problem and industry will soon be cleaned by the most economical and efficient method yet produced—vacuum cleaning.

Of great importance to general cleanliness is prompt and efficient removal of all rubbish, sweepings, etc. It is very good santiary practice to furnish receptacles of fireproof material in which rubbish and sweepings can be deposited. Employes can be persuaded to use these sanitary receptacles for rubbish by means of education through the house organ and by bulletin boards.

Drinking Water

Every industrial establishment should have an adequate supply of drinking water of a pleasing temperature as well as attractively clear and, by far the most important, it should be pure. Drinking water should be tested for impurities daily by a bacteriologist.

In some of the older plants there still exists the crude method of serving water to employes by the use of the Bristol-ware jars. Water of a proper quality but of varied temperature may be served reasonably safe in this manner if the jar is provided with a faucet and an individual cup of either metal or paper is used. However, extra care must be exercised to prevent the contamination from others using the same drinking vessel.

The filling of these jars safely depends largely upon the unit used. A tank mounted on wheels equipped with a pump has been found very efficient. This method prevents the

FIG. 2. DRESSING ROOM EQUIPPED WITH STEEL LOCKERS

possibility of an operator with dirty hands filling the jars from a pail and coming in contact with the water, also is less likely to catch any flying particles of dust that may be in the atmosphere.

Many industries where they have a good pure water supply either of their own or from the city, have installed individual cooling founts at various points throughout their plants which are equipped with sanitary drinking fount heads, the water being cooled by the medium of ice placed in the cooling tanks. This system works out fairly successfully.

The Most Satisfactory Method

The most satisfactory and effective method of distribution of water is by an automatically cooled circulating system with founts located at convenient places throughout the building for employes. There are several types of drinking fount heads on the market and if considering such a system, great care should be taken to give a thorough study to the drinking fount head as this is the point at which contamination can occur.

One of the heads which has given exceptional satisfaction and by many is believed to be the safest from contamination is one from which several streams of water flow from the inside of the ring toward the center. These streams unite in the center and form a larger stream of such pleasing quantity of water as to satisfy the employe.

It must be emphatically borne in mind that these founts as all other types of drinking units must be thoroughly cleansed daily to prevent contamination and to present a wholesome appearance. A cuspidor is sometimes placed a short distance from the fount for the use of those who are in the habit of chewing tobacco. It is claimed by many to eliminate the possibility of employes expectorating into the bowl of the drinking fountain, which is very disgusting and unsanitary.

Those desiring further information along the best lines of drinking equipment are referred to the United States Public Health Bulletin, Volume 32, issued May 11, 1917.

Cuspidors

Cuspidors are a necessary nuisance both in offices and factories to prevent spitting on floors and other places. The proper cleansing of the cuspidor is a very serious problem. First, because the work is not desirable; and, second, there are very few really efficient methods.

However, I have in mind one which has been used for several years and has given fair results. This cuspidor is made of galvanized metal about nine inches in diameter with a removable top which is concaved with two inches opening.

Collection and Distribution

The collection and distribution is done through the medium of a rectangular metal box equipped with a cover in four parts mounted on a four wheel truck and demountable in order that the load, box included, may be promptly removed from the truck and a load of clean cuspidors started on its tour of distribution and collection.

The cuspidor is emptied into a digestor composed of one-quarter inch screen receptacle placed on a sewer, the opening of which is surrounded with a metal cylinder with a foot operated cover. When the solid matter has filled the screen receptacle, it is removed from the cylindrical vessel and an empty screen replaces it, the full screen being emptied into a garbage can and covered ready for final disposition at the incinerator. Cuspidors after being emptied at the digestor are passed to a bench provided with racks properly equipped with pegs to set the bowl and covers of the cuspidor.

These racks are placed in a machine having a capacity of four racks. This machine is provided with warm water into which has been placed a washing solution. The water is pumped on to the contents through rapidly revolving sprays of considerable force.

When the washing is done, which requires one and a half minutes, the pump is stopped and the cuspidors are rinsed with a douche of steam and hot water. This thoroughly cleanses and disinfects and also heats the metal of which the cuspidors are made so that they dry rapidly after removing from machine. After removing from the trays they are again placed in the metal box ready for distribution.

Other Conveniences

Perhaps in some industries no item is so neglected as toilet accomodations. Frequently you find them located outside of the factory, sometimes quite a distance, causing a loss of time and endangering the health of the employes.

Toilets should be located within a factory building on an outside exposure for light and ventilation. All industrial and sanitary codes demand separate toilet compartments for each sex in every factory where men and women are employed.

It is good practice to provide toilets on each floor with due consideration as to distances the employe has to travel. Frequently toilets are installed in a tower especially built for elevators, stairs and toilet rooms located at the most practical point for the convenience of the occupation of the building and due consideration for future building construction. Much expense and trouble will be eliminated if the industrial engineers will select a standard of toilet equipment, considering the various points as applying to sanitation and efficiency.

Necessities and Comforts

Until recent years little or no attention was paid to the comforts of employes in reference to where they should hang their coats, hats or dinner baskets; how or where they should wash their hands or take a complete bath. In most instances, the coat and hat were hung on a nail in the workroom, the dinner basket was set under the work bench and if complete change of clothing was made into a working uniform it was done in the open workroom. It can be readily understood that under the old type of sweeping and performing of work without ventilating units, the dust circulating in the air settled over the clothes and dinner basket.

Many plants have no washing facilities and lunch is eaten with hands soiled from work. Investigations and efforts upon the part of progressive industrial managers have worked many improvements.

The locker has taken the place of the hook, washing facilities and showers, even though in some instances crude, have come to stay. In most instances lockers and washing units are distributed on working floors. Investigations and systematic study develop that from an economic standpoint lockers washing units and showers should be centralized under a caretaker at one or more entrances in the mill.

Almost invariably the individual locker system is being adopted as the cleanest, safest depository for outer garments.

Some system of inspection, however, must be provided to prevent the housing of unnecessary articles in lockers and to bring about the proper care of the locker itself by the employes.

Lockers should be constructed of metal connected in units to the best advantage of space available. Sufficient depth should be allowed for the use of a coat hanger in order that the garments of the employe could be spread out, for on some occasions they will be damp as a result of rain and spreading them on a coat hanger they will dry more quickly and will have a more presentable appearance. The width of the lockers should be sufficient to allow the hanging up of the hat and other garments if the employe desires to make a complete change. The height should be sufficient enough to take care of the average length coat.

The top of the locker slanting toward the floor eliminates the catching of dust, the catch-all for various types of material which might fall off and injure employes and presents a more orderly appearance. For purposes of cleaning, the locker should be set up sufficient height from the floor, at least eight inches, also to make it possible to attach a ventilating system to the bottom of the locker.

Latches and Locks

The selection of the latch and lock have much to do with the life of the locker. The latch should be of a type that the handle may be operated by pulling upward and outward. A cabinet lock system is more apt to get out of order than a padlock system and combination padlocks have been found to be the most appreciated by the employe on account of there being no keys to bother with or lose. Fewer garments have been stolen as a result of combinations being picked.

The following is a description of a locker unit used by one of the largest industries of the country after a most thorough investigation and test made both by the engineering department and its safety and sanitary organization.

A unit is composed of five lockers setting upon a base of four legs eight inches from floor.

Height from the floor of the locker from the base to top is five feet. Height back is five feet 6 inches. Width of each locker ten inches and depth eighteen inches within shelf within same fifty-four inches from floor extending nine inches from back. A groove in the shelf upon which the coat hanger can be hung. Two hooks on the opposite side from the groove. In the bottom two inches from the back end is a two inches hole. Edges are turned down for ventilating purposes. Over this opening is a slanting hinge cover, back of which is five inches from the floor, lowered so as to allow passage of air. This installation protects garments from covering up the ventilating floor of locker or any material falling into the hole. Slanting roof, combination padlock insert from top of locker door.

Lavatory Equipment

In selecting lavatory equipment, economy of course is a most important factor. The type of unit as to construction, material, control, life and appearance is also important. Units of porcelain and white enamel iron are perhaps the most desirable.

In large washrooms where the control of water can be handled by a caretaker, very practical lavatories are those constructed eight feet in length of white enamel iron with five gooseneeks provided with spray heads about 2 inches in diameter located twenty inches from the bottom of the lavatories through which the water flows with some pressure. Liquid soap dispensers are located between each spray head. No stopper at the waste openings should be supplied thus allowing the dirty water to run away, the employe washing under clean running water from the spray heads. Individual linen or paper towels can be used.

Where lavatory units are not under the control of a caretaker, it has been found most desirable from a health standpoint to control the water by foot equipment. The box foot control valve being considered one of the economic types of individual controls requiring less upkeep. A most desirable individual porcelain unit is now on the market. It is simple in construction, having no stopper and water is supplied by a gooseneck with spray head and a foot control. The soap can be either furnished by individual tilting style of liquid soap container or from one container with individual control for each lavatory.

Every industrial plant whether they do or do not have centrally located locker rooms ought to have a few shower baths. Where you have centrally located locker and washrooms, it is most desirable and efficient to put in a neatly constructed shower bath equipment, taking into consideration the number of showers required for the type of occupation of plant. If the work is dirty and grimy and poisons are used,

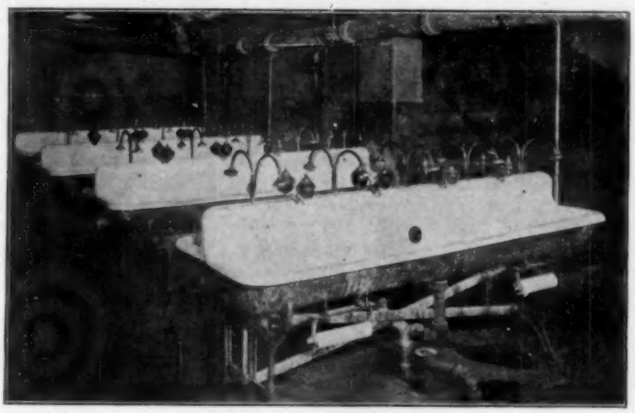

FIG. 3. PRACTICAL AND SANITARY WASHROOM

men should take a shower before leaving for home especially if they change all their clothes upon entering and leaving the mills.

Lunch Rooms

The sanitation in industrial lunch rooms is most frequently a much neglected situation. The success of the lunch unit and the health of the employes depends largely upon the inspection and sanitation of the unit itself and the control of the foods.

I shall not go into detail on this subject but I wish to warn all industrial managers that if their lunch units are not a success, they want to make a thorough personal investigation and without doubt they will find that sanitation enters more than any other item into the unsuccessful result.

After all, we are all human and we have more or less pride not only in our dress and cleanly appearance but in the food we eat. The Bible tells us "Cleanliness is next to Godliness." The better dressed and cleaner an employe, the greater asset he is to your business.

It goes without question that in the future both men and women are going to be attracted to the industrial plants which have good, clean, healthful working conditions.

Exports of Italian Rubber Goods

A recent statistical report by the Italian Financial Ministry comparing Italian export of rubber goods between the first five months of 1920 and the corresponding five months of the previous year 1919 shows a marvellous increase of this industry in that country. The import of raw rubber into Italy has decreased because of the stocks left from the war, and statistics show:—Imported during January-May, 1920, 1,952 tons, against imported during January- May, 1919, 5,933 tons. On the other hand, a considerable increase is to be registered in the importation of rubber goods, viz., tires imported during January-May, 1919, 250 tons; 1920, 558 tons; other goods, 1919, 120 tons; 1920, 356 tons. But this increase is not very important when compared with the export figures:—

	Jan.-May, 1919.	Jan.-May, 1920.
	Tons	Tons
Tires	475	1,855
Rubber tissues	6	103
Other rubber goods	35	391
Cables	155	1,451

The Making of a Tire's Most Essential Requirement-Fabric

H. R. Whitehead

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In this series of articles the writer will endeavor to take the reader direct to the cotton seed and carry him through the different processes of fabric manufacture until we arrive at the finished product suitable for the making of the tire fabric.

In the manufacture of tires one of the most vital materials constituting the qualities of a good tire is the fabric, and in order to produce this fabric we must consider several conditions that are required to make a quality fabric. We can use the utmost care in the process of manufacture, having the most modern machinery that can be purchased, but still if we do not have the proper raw material, and by this term I mean the cotton that goes into the manufacture of tire fabric, we shall not produce a finished product suitable for our requirements.

There are a number of different types of cotton being used for tire fabric purposes. The first type we will consider is the Peeler cotton. This cotton has a very much abused name in the cotton trade. As used today Peeler means nothing. Any white American cotton will be classified as Peeler in trade terms. Originally the Peeler seed was a selected product which gave us a very nice silky cotton, running about 1¼ inches in staple, but today we find in purchasing Peeler cotton in the open market that it runs anywhere from ⅞ inches to 1¼ inches in staple. Today we find this class of cotton growing anywhere in the United States, where originally it was grown in selected regions.

The Sea Island Variety

Another type of cotton which has been used extensively in the manufacture of tire fabric is Sea Island, grown on the islands off the Carolinas. At one time enough was produced to fill quite a portion of our requirements, especially along the lines of fine dress goods and sewing thread. With the beginning of the manufacture of automobile tires it was readily adopted for this class of manufacturing, but it is a peculiar thing that although a great many mills require this particular type of cotton, and it could have been readily sold, it has been allowed to deteriorate and decrease in production until now the production is limited to a very few thousand bales. The production of this type of cotton may be considered of no account whatever.

Other types, however, have sprung into existence, and we today have the Peruvian cotton, both the brown and the white; the brown type going under the trade name of Peruvian Mit Afifi, and the white Peruvian is now being sold under the trade name of Peruvian Tanguis. They are of altogether different character. The Peruvian Mit Afifi is of harsher type, and until recently it has been used quite extensively by the woolen trade by mixing a portion of cotton with the wool. The Peruvian Tanguis is of recent development, being a beautiful white cotton and of a much softer texture than the Peruvian Mit Afifi. The staple on both of these cottons runs to about 1¼ inches in length and very satisfactory results are being obtained in the manufacture of the tire fabric from them.

Brazilian Types

Another type of cotton which we may consider is the Brazilian, coming as the name implies from the regions of Brazil. This cotton has not been considered to a great extent in the past, due to the lack of care in the cultivation and ginning of the product. However, we find that by selecting the seed and carrying it across the water to Egypt wonderful results may be obtained by care in cultivation and the ginning of same. And it is the writer's opinion that within a few years we will have produced from this seed a cotton equal to any now being produced.

Within comparatively recent years a new source for long staple cotton was sought. The trail led to Arizona, where American interests and money have, through a process of irrigation, developed a cotton beautiful in length of staple and has a very silky appearance. Unfortunately this cotton does not possess elasticity and appears to be quite brittle, which is detrimental to good tire fabric, but it should have a good field in the manufacture of fine dress goods and the spinning of fine counts of yarn. While the Egyptian cotton is raised to a certain extent under irrigation methods, being dependent upon the overflow of the Nile river for its moisture, either atmospheric conditions or the wash from the surrounding country draining into the Nile river produces a much stronger and elastic cotton than has been produced in the Arizona region up to the present time.

Egyptian Cottons

As nearly every cotton under the sun has been experimented with in the manufacture of tire fabrics, the writer connot fail to take the reader to the shores of Egypt before he has completed the list of cottons required. In his country we have various types of cotton, among which are the Afifi, Assili, Abassi, Ashmouni, Janovitch, Nubari and Sakellarides.

Afifi is the bread and cheese quality of Egypt. The name is derived from a village in the province of Galiubia and was first grown in the early ages. The fiber is brown and glossy and the staple varies from 1¼ to 1½ inches. Assili is called the thoroughbred, and it is claimed will take the place of Afifi in a short time. Abassi is the only white Egyptian cotton. The fiber is finer than Afifi. Ashmouni is the old cotton of Egypt, and while formerly it was grown over all lower Egypt the cultivation is now almost entirely confined to upper Egypt. Janovitch is a selected Afifi, and it is probably the most glossy and fine cotton which Egypt produces. Sakellarides is a new variety of long staple cotton similar to Janovitch, but superior in some respects and equal to Sea Island for certain purposes. Egypt being almost a rainless country is dependent for its water supply upon the Nile.

Ginning

I have previously mentioned the fact that cotton has been injured in the process of ginning and perhaps a little explanation along this line may be necessary at this time. In the process of cotton picking, which up to the present time has only been accomplished by hand picking, the coton is removed from the pods or bolls, drawing by this operation along with the lint cotton the large seeds that are in the pods.

There are two types of gins being used for the removal of the seeds, namely: the roller gin and the saw gin. In the roller gin the cotton is carried between a series of rolls and the seed is gradually pulled from the lint with very little bad effects upon the cotton, but the production of the roller gin is much more limited than the saw type of gin and consequently is not so much used in America. However, in Egypt and wherever longer staples are produced, the roller gin is used almost exclusively. The saw type of gin is made up of a series of roller saws and the cotton in passing between the saws is rapidly removed from the seeds, but with injurious effects to the fibre itself. However, on account of the increased production, which is about five hundred pounds per hour, the American ginners prefer this type to the roller gin.

(Continued on Page 150)

* The "Mason Mail"

The Rubber Industry of Bolivia

The following description of the rubber industry in Bolivia is a report by Commissioner W. L. Schurz and appeared in "Commerce Reports" issued by the Bureau of Foreign and Domestic Commerce of the Department of Commerce, Washington, D. C.

The rubber industry, one of the most important in Bolivia, is centered in the Amazonian region of the republic. Though the first rubber was taken out along the Mamore in 1864 and production amounted to 2,000 arrobas (25.36 pounds each) by 1878, the development of the industry on a large scale dates from the eighties. Much of the rubber country was explored about that time by an American, Edwin Heath. The year 1882 was a great one in the history of the industry, but the depression caused by the outbreak of swamp fever, which followed the floods of 1886, caused a temporary setback. With the rapidly increasing demands for the product, rubber hunters poured into the Beni and Mamore districts, and numerous companies were organized to exploit the resources of those regions. The production of 1898 was double that of the previous year and in 1900 reached the highest figure attained until 1911. However, the best returns from the business were during the boom years from 1909 to 1911, during which period rubber reached the maximum price of 12 shillings ($2.92) per pound. From that time the decline in the returns was constant until 1915, but the yield of 1917 brought only about two-thirds as much as did that of 1910. By 1917 the East Indian plantations were producing and Amazonian rubber had taken the second place in the world market, at least in so far as quantity was concerned.

Districts Producing Rubber

Rubber is found in the Territory of Colonias and in the four northernmost departments of the republic—El Beni, La Paz, Cochabamba, and Santa Cruz. The Beni district has steadily declined in relative importance as its stock of trees has been worked out, and the territory of Colonias has become the most productive rubber region in Bolivia. Rubber trees are found in large quantities along all the rivers of Colonias, including the Acre, Abuna, Orton, Madre de Dios, and their tributaries. Development in all these districts is comparatively recent, the rubber resources of the Abuna not having been worked until 1904. Most of the gomales, or rubber plantations, of El Beni are along the lower reaches of the Beni and the Mamore, in the Province of Vaca Diez, and to a lesser extent in that of Yacuma; there are also important fields in the Itenez Basin. The rubber districts of Santa Cruz are located in the provinces of Nuflo de Chavez and Velasco, and lie mostly between the San Miguel and the Paragua. San Ignacio and Concepcion are the chief centers of the rubber business of this part of Bolivia. The rubber industry of the Department of La Paz is restricted to the Province of Caupolican, and to a much lesser degree to those of Larecaja, Munecas, and Nor Yungas. The comparatively unimportant gomales of the Department of Cochabamba are situated in the Province of the Chapare in the basin of the river of that name and in the basin of the D'Orbigny.

Kinds of Rubber Obtained; Location of Trees

The highest grade of Amazonian rubber, known as Para fine, is derived from the hevea tree, which stands from 30 to 40 meters (meter = 3.28 feet) high and may attain a diameter of a meter or even more. An inferior grade of rubber is extracted from the caucho tree (Castilloa elastica). The product is sold on the market as caucho. The caucho trees that are worked are generally from 30 to 50 meters high. Contrary to the procedure used with the hevea, the caucho must be cut down in order to obtain the sap. The rubber known as ceara is extracted from the manicoba tree (Manihot glaziovii), which is also found, though not in great numbers, in the Bolivian forests.

The rubber trees do not exist in solid stands, but are found scattered throughout the general forest. The belts along the rivers where they occur seldom extend inland more than 10 or 12 miles. The tree prefers low ground in the neighborhood of swamps and watercourses, where the moisture is retained in the ground throughout the year, and it appears to thrive best on land that is inundated about once every three years.

Laws Regarding Rubber Lands

Bolivian legislation in regard to rubber lands is based on the Ley de Gomas of December 12, 1895, put into effect by decree of June 30, 1896, and modified in important respects by a series of subsequent laws. The law of 1895 fixed the estrada of 150 rubber trees as the unit of concessions of land and authorized the delegate of the Territory of Colonias and the prefects of departments in which rubber trees existed to grant up to a maximum of 500 estradas to individuals and 1,000 estradas to legally constituted companies. The privilege of making larger grants was reserved to the National Congress. These provisions were not to affect the titles to properties already constituted which contained more than the maximum number of estradas permitted by the law. The concessionaires were to pay for each estrada 15 bolivianos (1 boliviano = $0.3893 United States currency) in 15 yearly installments, though they might consolidate their title by paying the entire sum at once. All properties granted were to be surveyed and their limits clearly marked off.

The custom of measuring grants by estradas gave rise to such great abuses that a law of October 26, 1905. was issued declaring that "the unit of measurment for all acquisitions is the hectare (1 hectare = 2.471 acres), the granting of lands by estradas being prohibited henceforth." According to this law, any native of the republic or foreigner capable of assuming the obligations of the civil law might acquire by purchase from the Government a maximum of 20,000 hectares at the price of 1 boliviano per hectare. Purchasers of such lands were obligated to colonize the land at the rate of one family for each 1,000 hectares. A special act of Congress was required for grants of land exceeding 20,000 hectares. Those who were in possession of State lands to which they had not confirmed their titles were given a period of two years in which they might consolidate their rights to these properties in conformance with the requirements of this law. In the event of failure to satisfy the provisions of the law the lands in question were to revert to the State. This law was put into execution by a decree dated June 20, 1907.

Perfecting of Titles Allowed Until End of 1920

The further sale of public lands was suspended by a law of September 11, 1915, and those who had occupied public lands in accordance with the law of 1905 were allowed until the end of 1920 in which to perfect their titles. Further petitions for lands were to be reserved for the exclusive consideration of the National Congress. A law of September 26, 1917, provided for a tax of one-half centavo (1 centavo = 0.3 cent) per hectare on all lands secured under the provisions of these laws, the proceeds to go toward a fund for the construction of a railway from Cochabamba to Santa Cruz.

The relation between the estrada and hectare, which had been left undetermined by the law of 1905, was fixed at 75 hectares for each estrada by a law of October 31, 1917. All grantees of lands under the previous law who had not perfected their titles at this time were required to accept this proportion in determining the extent of their properties. In case the land actually occupied exceeded the maximum provided for in accordance with this ratio, the holder of the land might either renounce the excess or retain it by the payment of 20 centavos for each hectare of excess.

Practically all the rubber-bearing lands in Bolivia are now included in grants to which the titles have either been perfected or which are the subject of negotiations with the Government. However, many holders of rubber lands have not complied with the requirements of the laws under which they have received their grants, and the Government anticipates that on the expiration of the term allowed by the law of September 11, 1915, (December 31, 1920), this failure to comply with the terms of their concessions will require it to reassume large tracts of land now occupied by the rubber companies. The requirements in regard to the settlement of

one family for each thousand hectares of land has not been complied with in many cases.

Principal Rubber Companies

The most important of the rubber interests operating in Bolivia include the following:

Suarez Hermanos, the most powerful of all the Bolivian rubber companies, has its home offices in London and also has a receiving and forwarding station at Para. The Bolivian headquarters of the Suarez interests are located at Cachuela Esperanza, a short distance above Villa Bella, on the Beni, at which point are large stores and warehouses. The rubber fields extend along the Beni to Riberalta and up the Madre de Dios to the Peruvian frontier. In addition the company has nearly 2,000,000 hectares on the Orton and its tributaries, besides large properties on the Acre and the Abuna. Altogether it possesses nearly 10,000,000 hectares. About 60 per cent of the rubber sent through Villa Bella is consigned by it. The total resources of this firm are said to aggregate about 50,000,000 bolivianos.

The German firm of Alfredo W. Barber & Co. has its central office in Cochabamba, with branches in Trinidad, Guayaramerin, and at several points in the Itenez country, where it possesses large gomales. It also has properties in the Abuna and Mamore districts.

A long-established German company, Zeller, Villinger & Co., has rubber properties scattered from the Beni country to the upper Itenez region. It has houses at Riberalta, Guayaramerin, Baures, and Magdalena (Itenez), Santa Cruz, Trinidad, and Puerto Suarez (Rio Paraguay).

Brailard & Co., a French company, with headquarters at Riberalta, owns gomales in the Beni and along some of the rivers of the Territory of Colonias.

Another French company, known as Societe Picollet, was founded in 1910 with a capital of 2,500,000 francs (1 = 19.3 cents), which has been increased to about 3,500,000 francs. The center of operations of this firm is in the Abuna district, with a trading house at Manoa, at the mouth of the Abuna.

The trading house of Guillermo Demmer is located at Riberalta and owns gomales in northern Colonias.

The Sociedad Comercial Matto Grosso y Bolivia, which is the German firm of Stoffen, Schuack, Mueller & Co., has trading stations at Guayaramerin, Santa Cruz, Puerto Suarez, Corumba (Brazil), and at certain points in the Itenez region. Most of its rubber properties are situated in the Itenez.

Still another German firm, Komarek & Bruckner, owns gomales in the Itenez and trading houses at Magdalena and Baures.

The rubber lands of the English Anglo-Bolivian Rubber Estates (Ltd.) are situated in the basin of the Rio Blanco, in the northern part of the Department of Santa Cruz. Its chief center of operations is Concepcion, in the Province of Velasco. It formerly took out most of its rubber through Puerto Suarez and the Rio Paraguay, but recently closed the former post.

The Bolivian, Nicanor G. Salvatierra, has large gomales in the Madre de Dios, Abuna, and Beni.

Besides these interests, there are scores of others with rubber estates, some of theme aggregating over 200,000 hectares of land.

Method of Exploitation; "Herring-Bone System"

The methods of gathering the rubber used by the Bolivian seringueiro, or extractor and coagulator, are much the same throughout the rubber districts of the Republic, though some improvements have been made in the procedure of extraction during the last few years. Each seringueiro or picador is assigned an estrada of 150 trees, which he is to work. Every day during the season he goes the rounds of his estrada, beginning his labors about daybreak. With a long-handled hatchet he makes from 6 to 12 incisions in the bark of the tree as high as he can reach on the trunk, and under each incision he places a tin cup into which the latex or sap flows. It requires about three hours to make this first round of the estrada, and after a short rest the seringueiro makes a second round of the trees to collect the latex from the cups. He empties the latex into a bucket and carries the proceeds of his morning's work to his encampment for coagulation, which is accomplished by a smoking process.

The contents of the bucket are poured into a basin and the latex poured over a stick which is revolved in the dense smoke produced from hard palm wood or palm nuts burned in a small oven. The latex coagulates rapidly in this smoke and gradually forms a ball, which is taken off when at a convenient size, about 40 or 50 pounds, and placed to dry under a roof of palm leaves. In this way the characteristic Para rubber balls are produced, and an incision will show the layers made by the turning of the rubber during the process of coagulation.

Each day the workman makes the incision on the tree an inch or two lower down on the trunk until the roots are reached, when the tree is left to rest until the next year. Trees are worked continuously during the rainy season of each year for two or three years, and then are not worked for an equal period. The life of a tree which is under exploitation is from 15 to 30 years, largely depending on the care which is used in making the incisions. Those made by a careless picador will reach below the bark of the tree and injure its vital parts, thus causing it to die before its natural term of life.

Of late years experiments have been made with the so-called herring-bone system, which is used on the plantations. By this method a knife with a short convex blade just wide enough to enter the bark is used to make a long vertical incision about 4 feet in length. A number of parallel lateral incisions are then made on each side of and terminating in the central incision. The latter serves as a kind of trough through which the latex from the lateral incisions flows down the side of the tree and out through a small spout into a bucket. This method preserves the tree from the dangers which result from the deep incisions made by the old system in which the hatchet is used.

Scarcity of Labor Supply

The labor question in the rubber country has always presented serious difficulties because of the scarcity of the labor supply within reach of the gomales. During the nineties and the height of the rubber boom, many abuses were undoubtedly committed in the effort to secure laborers, especially by the enganchadores or contractors who supplied the rubber companies with their labor force. The system used in most cases was to advance the Indian who was hired as seringueiro a certain amount of money, usually equivalent to the value of about 200 pounds of rubber. The Indian agreed to work on the estate for a year or more, or else to deliver a certain quantity of rubber. He was paid for the rubber delivered and charged with the value of the food and other articles which he bought in the stores operated by the company. Besides the acquisition of his necessary working equipment, which included a hatchet and other articles used in gathering the rubber, and generally a rifle for hunting, the seringueiro was prone to waste his pay on drink, articles of display, and other unnecessary purchases. As a result he often found himself so deeply in debt to the owner of the estate that he was not able to pay off his account at the end of his contract. In this case it was common for him to be retained at work on the estate until he had paid off his debt, which might be an affair of years.

Condition of Rubber Gatherers Improved Through Legislation

A national law of November 14, 1896, aimed to correct the worst abuses of the labor system as it existed then, and to protect the rights of the peons. This law required that the contractor or employer should pay the transportation of the laborer from his home to his destination in the gomales, and thence to his home at the expiration of his contract. The patron was also obliged to supply the laborer with food and, in case of sickness, with medicines. The amount of money that might be advanced to a peon was also limited to 400 bolivianos, and employers were forced to supply their workmen with a book in which the latters' accounts could be kept and in accordance with which their accounts could be periodically liquidated. Each contractor of peons was furthermore required to deposit 200 bolivanos in some depository designated by the Government for each peon contracted, as a guaranty of his compliance with the conditions in regard to returning the peons to their homes at the expiration of their contracts or paying them the 100 bolivianos prescribed in case they desired to remain in the rubber country.

There has been a manifest improvement in the condition of the rubber gatherers during the past few years, though on the other hand they have suffered severely from the rise in prices of necessities. Some rubber companies still adhere to the old system of contract and advances; however, many estates are now running their labor as far as possible on a strictly pay-on-delivery basis. Employers complain that their workmen are given to decamping on the slightest provocation or for no other reason than their momentary whims, despite the terms of their contracts; therefore, seringueiros are being encouraged to bring in their families and establish homes on the rubber estates, where they can cultivate a piece of land and live more or less permanently.

Sometimes a section of rubber forest is rented to a contractor, who occupies a certain area which he works with peons hired by himself. He sells the rubber produced to the owner of the gomal at a prearranged price. However, those who rent lands in this fashion work them with a view to gaining the largest possible return for themselves within the shortest possible time, to the ruin of the property rented, so that this arrangement serves only as a last resort.

Competition of Plantation Rubber

The Amazonian rubber industry, including, of course, that of Bolivia, has been seriously threatened by the rapid development of the East Indian plantations. Though realizing the menace, the South American rubber interests have done little to meet it. A few Bolivian companies have considered the establishment of plantations, and at least one prominent rubber grower has actually planted some trees, but the movement has progressed no further. Meanwhile, owing to their more economical methods, the plantations have rapidly gained control of the world rubber market. The following chart will illustrate the rise of the plantation industry and its relative position in the rubber industry of the world (1 long ton = 2,240 pounds):

Years	World production *Long tons*	Production of plantations — Quantity *Long tons*	Acreage	Total *Per cent*
1906	66,210	510	237,240	0.7
1907	69,000	1,000	402,912	1.4
1908	65,400	1,800	546,385	2.8
1909	69,600	3,600	681,355	5.2
1910	70,500	8,200	885,079	11.6
1911	75,149	14,419	1,200,407	19.2
1912	98,928	28,218	1,448,033	28.5
1913	108,440	47,618	1,611,124	43.9
1914	120,380	71,380	1,727,820	59.2
1915	158,702	107,867	1,792,795	67.9
1916	201,598	152,650	1,915,553	75.7
1917	256,879	204,251	1,995,553	79.5
1918	241,579	200,950	.....	83.1
1919	381,860	340,225	.....	89.0
1920	a403,000	a360,000	.....	89.3

a Estimated.

The position of Amazonian and other rubber, chiefly African, during the same period is represented by the following table:

Years	Amazonian — Long tons	Amazonian — Percentage of total	African, etc. — Long tons	African, etc. — Percentage of total
1906	36,000	54.4	29,700	44.9
1907	38,000	55.1	30,000	43.5
1908	39,000	59.6	24,600	37.6
1909	42,000	60.3	24,000	34.5
1910	40,800	57.9	21,500	30.5
1911	37,730	50.2	23,000	30.6
1912	40,410	42.9	28,000	28.3
1913	39,370	36.3	21,452	19.8
1914	37,000	30.7	12,000	10.0
1915	37,220	23.5	13,615	8.6
1916	36,500	18.1	12,448	6.2
1917	39,370	15.3	13,258	5.2
1918	30,700	12.5	9,929	4.1
1919	34,285	8.9	7,350	1.92
1920	a35,000	8.6	a8,000	1.98

a Estimated.

Comparative Prices

The comparative average prices of plantation and fine grade Amazonian rubber for the same period were as follows, in shillings and pence per pound:

Years	Plantation *s.*	Plantation *d.*	Fine hard Para *s.*	Fine hard Para *d.*
1906	5	10½	5	2¾
1907	4	11½	4	6
1908	4	2¾	4	0½
1909	7	1	6	11
1910	8	9	8	10
1911	5	5½	5	0
1912	4	9	4	10
1913	3	0¼	3	8
1914	3	0½	2	10½
1915	2	6	2	7
1916	2	10¼	3	1½
1917	2	9¾	3	1¾
1918	2	3¼	2	11½
1919	2	0¼	2	5½

(According to the Daily Commercial Report, published in London on September 15, 1920, quotations on plantation rubber were 1s. 7½d.; on fine hard Para, 1s. 8d.)

Export Duties Depend on Rubber Quotations

The Bolivian export tariff provides for the following scale of duties on the exportation of rubber. The duty depends on the momentary quotation on the pound of rubber:

Quotation, pence per pound Fine:	Value of the metric ton *Bolivianos*	Duty *P.ct.*	Quotation, pence per pound Ordinary:	Value of the metric ton *Bolivianos*	Duty *P.ct.*
10 to 24	798 to 1,915	Free	10 to 24	558 to 1,340	Free
25 to 36	1,995 to 2,872	2	25 to 36	1,396 to 2,010	2
37 to 48	2,952 to 3,830	4	37 to 48	2,066 to 2,681	4
49 to 100	3,910 to 7,980	6	49 to 100	2,737 to 5,586	6

The official value, on the basis of which the duty is levied, is fixed at 70 per cent of the market quotation in London. These quotations are forwarded twice a month by the Bolivian consulate in London.

Classification of Rubber

On the arrival of a consignment of rubber at Manaos or Para, a bolacha or sample ball is cut through several layers with a knife for the purpose of classifying the lot. There are eight classes, according to this preliminary inspection, though the rubber is generally shipped as of two classes. The eight classes are as follows: Fina, fina flaca, entrefina, entre-fina-flaca, sernamby enrama, sernamby virgen, sernamby de caucho, and caucho. However, these are exported to the foreign market as fine or ordinary. The rubber known as fine hard Para is the prime product of the latex of the hevea. Sernamby is second quality rubber, and though, a product of the hevea, it contains impurities which mar its value; it is sometimes made of the residue after the preparation of the fine Para. If rain has fallen in the cups while the latex is being collected, the product will be classified as sernamby. Caucho is the product of the caucho tree and is altogether a lower grade of rubber.

The fact that Bolivian rubber is either classed as Para or Mollendo on the foreign market does an injustice to Bolivia against which Bolivians have long protested. Amazonian rubber is known to the rubber trade only by the ultimate port of shipment, which is generally either Para, Brazil, or Mollendo, Peru. The rubber from the country about the lower reaches of the rivers is exported through Para, and that from the Beni headwaters is sent out through the Pacific port of Mollendo. However, one important Liverpool house lists the rubber from the upper Beni as Mapiri, from the name of the river along which most of it is collected.

Exports of Rubber from 1890 to 1918

The exports of rubber from Bolivia during the period 1890 to 1918 were as follows (1 kilo = 2.2 pounds):

Years	Kilos	Value in bolivianos	Years	Kilos	Value in bolivianos
1890	294,000	1,260,000	1905	1,677,796	7,341,165
1891	345,000	1,350,000	1906	1,929,608	10,612,848
1892	363,400	1,422,000	1907	1,830,513	8,841,380
1893	394,818	1,504,940	1908	2,606,591	11,286,541
1894	632,500	2,475,000	1909	3,052,453	21,947,138
1895	820,400	3,070,300	1910	3,117,650	27,653,555
1896	1,140,712	4,853,560	1911	3,645,551	18,921,192
1897	1,674,216	6,551,280	1912	4,079,828	15,508,721
1898	3,155,955	13,556,593	1913	5,143,214	14,651,647
1899	2,140,000	8,210,000	1914	4,484,915	8,280,370
1900	3,496,240	10,403,959	1915	5,054,847	10,768,937
1901	3,465,063	9,151,823	1916	4,916,545	13,292,264
1902	1,902,993	5,910,334	1917	5,843,213	15,424,202
1903	1,321,034	2,977,819	1918	4,287,514	11,038,042
1904	1,569,628	4,175,828			

Exports of 1918 were divided into 2,860,509 kilos of fine valued at 8,272,579 bolivianos and 1,427,005 kilos of ordinary valued at 2,765,463 bolivianos.

Relation of Rubber to Other Exports of Bolivia

The relation of exports of rubber to the total export trade of the Republic from 1911 to 1918 is shown by the following table:

	Percentage of value		Percentage of value
1911	22.89	1916	13.09
1912	17.20	1917	9.79
1913	12.58	1918	6.04
1915	11.31		

This falling percentage is largely due to the increase in the exports of tin and other minerals, and to a decrease in the price of rubber.

United States Chief Country of Destination

In 1918, exports of fine rubber to various countries were as follows:

Countries	Kilos	Value	
		Bolivianos	Per cent
United States	2,404,334	6,966,424	84.22
France	198,813	591,134	7.15
Uruguay	141,145	418,044	5.06
Great Britain	115,328	294,015	3.53
Spain	715	2,517	.03
Chile	174	445	.01

The increasing importance of the United States as a buyer of Bolivian rubber is shown by the following table, which gives the percentage taken by the chief countries of destination since 1912:

Countries	1912 *Per cent*	1913 *Per cent*	1914 *Per cent*	1915 *Per cent*	1916 *Per cent*	1917 *Per cent*	1918 *Per cent*
United States	2.30	3.7	9.4	91.7	91.45	83.98	84.22
Germany	30.2	17.8	10.75	.8	....	....	....
Belgium	12.5	8.9	3.5	...	....	....	....
France	9.5	18.15	12.9	1.4	2.27	6.81	7.15
Great Britain	45.5	50.9	63.45	6.6	4.08	6.52	3.53

Production of Rubber by Districts

The production of rubber by districts during the years 1911 to 1916 was as follows:

Year and district	Quantity		Value	
	Kilos	Percentage	Bolivianos	Percentage
1911				
Colonias	1,617,072	44.36	8,597,874	45.45
Beni	1,596,857	41.33	7,762,151	41.02
La Paz	315,150	8.64	1,547,386	8.18
Santa Cruz	206,472	5.66	1,013,770	5.35
1912				
Colonias	1,895,069	46.39	7,778,758	50.16
Beni	1,783,563	43.66	6,393,720	41.23
La Paz	926,693	7.26	890,079	5.74
Santa Cruz	109,503	2,69	446,161	2.87
1913				
Colonias	2,820,935	54.85	7,135,850	48.71
Beni	1,907,056	37.06	6,400,828	43.69
La Paz	290,061	5.65	725,152	4.94
Santa Cruz	125,161	2.44	389,815	2.66
1914				
Colonias	3,933,288	87.73	7,259,759	87.68
Beni	149,281	3.32	276,279	3.34
La Paz	198,645	4.42	367,481	4.43
Santa Cruz	203,700	4.53	376,847	4.55
1915				
Colonias	991,005	48.22	8,744,889	81.23
Beni	698,987	34,01	1,411,036	12.99
La Paz	185,996	9.06	167,555	1.56
Santa Cruz	178,957	8.71	455,445	4.22
1916				
Colonias	3,894,744	79.22	10,621,165	79.91
Beni	608,144	12.37	1,619,228	12.18
La Paz	207,743	4.23	440,977	3.32
Santa Cruz	205,913	4.18	610,892	4.59

Exports of rubber from Bolivia by regions during 1918 were as follows:

	Bolivianos
Colonias	9,831,181
Beni	602,986
La Paz	134,282
Santa Cruz	465,018
Cocohabamba	4,575

The principal customhouses through which rubber is exported are Villa Bella, Guayaramerin, Cobija, and Abuna for Colonias and the Beni; Puerto Suarez for the upper Itenez and Santa Cruz; and La Paz and Puerto Acosta for the upper Beni region.

The Making of a Tire's Most Essential Requirement--Fabric

(*Continued from Page 146*)

The textile manufacturers have for years been demanding a better type of ginning, also wrapping of cotton bales, but have acomplished nothing along these lines. It certainly would be of much benefit to the farmers themselves, and also to the manufacturers of cotton fabrics of all kinds, if something could be done to produce better ginning facilities and wrapping and baling of American cotton. To those who have traveled through the cotton area it has been a common sight to see bales of cotton with wrapping all torn lying out in open fields or under the scant protection of leafless trees throughout the winter months. This is a sad neglect of material worth from $250.00 to $500.00 for every bale lying in this condition, but I must admit that there has been progress along these lines, and today we find more warehouses and more encouragement to the farmer to handle properly his material for ginning than we have seen in the history of cotton growing. We certainly hope that in the near future if the farmers do not care to market their cotton immediately after it has been through the ginning process there will be ample facilities for warehousing immediately after it leaves the gin.

After the cotton has left the gin another important step arises, and this is the classification of the cotton; that is, suitable types of cotton must be selected for the material into which it is to be manufactured. We have individual fibers of cotton ranging from ¾ inches to 2 inches length. The question "What is the length of the staple of cotton being used?" is quite frequently asked. By this it is meant what is the length of the fiber? In order to determine this it requires considerable experience and practice. However, it can be readily done by experts in this line and as soon as it is accomplished the bale is tagged showing the length of fiber which it contains.

Another point to be considered is the grade of the cotton. This has nothing whatever to do with the staple, but the term signifies the amount of dirt or leaf which it contains. The grading of the cotton is done entirely by the eye, and the color is also considered in the same way. Some manufacturers prefer a pure white cotton and certain classes of fabric demand it. But Peeler cotton, due to climatic conditions, does not always turn out to be entirely white. That is, it may get weather or brown stains which turn it to a brownish tint somewhat resembling Egyptian or Brazilian cotton, and it is so classed, listing the class to which it belongs and specifying "tinged" or "off color."

Bender cotton, which is also an American cotton, is of a pearly gray in color and is grown along the bends of the Mississippi river and due to the character of the soil it is not a particularly white cotton.

In purchasing the cotton for the manufacture of tire fabric it is usually purchased on a type submitted by the cotton broker and he is informed as to the number of bales which are required. It is immediately shipped from the section which he selects and is transporteed to the warehouse of the mill. It is then unloaded and must be reweighed and classified to see if it conforms to the type on which it was purchased and also the invoice weights under which it was sold. If the cotton does not meet the classification under which it was purchased the cotton is rejected and must be replaced with cotton that will meet the requirements.

In the next contribution by the writer, he will start the reader with the first process of manufacturing of tire fabric and lead him step by step in succeeding articles to the finished material.

News from the Rubber Metropolis

Outlook for the Rubber Industry Grows More Promising—New Lines of Manufacture Considered—Goodyear Tire & Rubber Co. Issues Statement—Tire Prices Reduced

The Outlook for the Industry

(Special Akron Correspondence)

From outward appearances in the Akron manufacturing district it appears that the depression in the rubber industry has struck bottom. And from inner circles of the large rubber and tire companies there is issuing a note of optimism that rings true. The entire district is looking forward to a resumption of activities in the great plants in Akron and nearby cities and towns within the very near future.

By resumption of activities is not meant that these factories will climb back to the stirring days of 1919. But the signs point to an end in the laying off of workers and the gradual recalling of the thousands who have been forced into idleness by the recent depression.

Even now reports are circulated in Akron almost every day of increased work in some departments of the rubber factories, both large and small. Some of this increased activity, it is explained, comes as a result of companies going into new lines of manufacture.

For instance, the Marathon Rubber Co. of Cuyahoga Falls has plans for a rubberized golf bag made of the same material that is being used to put out men's belts. Other companies are going into well established lines.

Hence the depression may have the effect of stabilizing the rubber industry. Heretofore, especially in the last two years, the companies specialized on tires for motor vehicles of all kinds. They are some who argue that this specializing is responsible for the sudden depression in the tire industry. The great increase in production, finally catching up with the demand and piling up an immense over-production during the early days of the business depression.

Experts on manufacturing agree that there are hundreds, if not thousands, of uses to which rubber and rubberized goods can be put which are not now included in the catalogues of the big companies. With great manufacturing plants now available as a result of the frenzied building of the past two years, there will be plenty of opportunity to go into new lines, it is said.

New Lines of Manufacture

The expansion of the rubber industry into new lines of manufacture is only one of the possibilities which are presenting themselves to insure a solid basis for the business in the future. As long as motor cars are run, tires will be needed. As long as people walk, rubber shoes and heels will be worn out. The replacing of these and scores of other articles, worn out every day, will go a long way to keeping the Akron plants busy. Then there is the original equipment whi h constitutes a great part of the rubber business.

The outlook for the rubber industry is well summed up in a letter sent to stockholders of the Goodyear Tire & Rubber Co. on November 16.

Goodyear directors say that profits for the fiscal year ended November 1 are expected to exceed $27,000,000, subject to federal tax. The Goodyear business for the year showed an increase of $38,000,000 or twenty-two per cent over that of the preceding twelve months.

Goodyear Issues Statement

Following is the statement:

"Goodyear sales for the fiscal year 1919-1920, which closed October 31, reached the figures of $206,000,000, as compared with $168,000,000 the previous year. This gain of $38,000,000, or twenty-two per cent, in the face of recent business conditions, indicates the strength of the public demand for Goodyear products.

"However, it is inevitable that Goodyear sales should be affected by the present business depression. For several years Goodyear has been supplying automobile manufacturers with approximately fifty per cent of all tires used on new cars, and in order to protect these large customers it has been necessary to keep generous reserves of raw materials on hand and on order.

"Within the past five months automobile production has been reduced from the highest peak ever attained, to a point far below normal. Naturally, this drastic curtailment has been reflected in our manufacturers' orders and while we have taken prompt action to curtail our raw material supply, it has been impossible to prevent our inventories from piling up rapidly. Tire dealers also have been reducing stocks and the usual stock replenishment orders are being delayed.

"Consequently our main problem has been to provide adequate finances to carry our inventories. This condition has been met by an arrangement with a group of banking interests for a temporary loan of $25,000,000 which enables us to meet our obligations.

"While industry in general has been affected by the recent adjustment, we feel that, looking to the future, the prospects for the Goodyear company to obtain an increased share of the available business are extremely bright. Goodyear sales of automobile tires are the largest in the world and the position of this company in the field is stronger than ever.

"Sixty per cent of all new rubber tired buggies and fifty per cent of new motorcycles are fitted with Goodyear tires, and our business is by no means confined to the domestic field, as shown by the fact that export sales increased from $8,000,000 in 1919 to $15,000,000 in 1920, with excellent prospects for the future.

"The rubber industry has become one of the largest and one of the most necessary in the satisfying of human needs. Without tires the transportation of the world would be stagnated. Without mechanical rubber goods many industries would be prostrate. Goodyear soles and heels have come to be a staple necessity with millions of users.

"The directors are looking toward the future with confidence and with the firm intention of conducting this business on a sound and economical basis so that the investments of all stockholders will be secured and enhanced."

Tire Prices Reduced

(Special Akron Correspondence)

A general reduction in the prices of products of Akron rubber factories is being gradually accomplished.

Practically every manufacturer of pneumatic and solid tires for motor cars has announced reductions. The price cuts vary from five to twenty per cent.

First news of the forthcoming break in prices was printed in Akron in the shape of dispatches from New York telling of plans made by Goodyear and United States Rubber to cut lists.

A short time later Goodyear made an official statement cutting prices as much as fifteen per cent. This was immediately followed by other companies, the ultimate reduction being practically the same in all cases.

One of the last of the official statements was made by the B. F. Goodrich Rubber

On the 13th of November the following announcement was sent from the Goodrich offices at Akron:

A reduction in automobile and solid truck tire prices was announced recently by the B. F. Goodrich Rubber Co. These new price schedules are now in effect and show reductions ranging up to fifteen per cent on automobile tires and ten per cent on solid truck tires.

This definite recession in users' prices by one of the larger rubber companies is of marked importance to the motoring public and is expected by men well qualified to speak to have a favorable effect on thousands of workers in automotive producing centers through its tendency to lower the cost of motor car operation and maintenance and thereby stimulate production, rubber men declared today.

In announcing the price cut the Goodrich Co. said it was to aid in bringing general business conditions back to normal

From a manufacturing standpoint there is little to warrant a reduction in the price of tires at the present time." said the company in an official statement. "The company feels, however, that it will be more than compensated by assisting its customers to get back more rapidly to normal living conditions."

Ideal Buys Porter Rubber

The Porter Rubber Co., of Salem, Ohio, has been purchased by the Ideal Tire and Rubber Co., of Cleveland. The Salem plant will continue operation as before. The consolidation of the two companies is the first step in the plan for the Ideal company to take over ten of the smaller rubber companies in Ohio.

Goodyear Passes Dividend

(Special Akron Correspondence)

First announcement on the part of a large manufacturer of tires and other rubber products in the Akron district to pass the usual dividend on common stock came from the directors of the Goodyear Tire & Rubber Co. Saturday, Nov. 13.

The announcement was brief. It said: "At the meeting held today, it was decided by the directors that in view of the present financial and business conditions and in order to conserve the cash resources of the company it was inadvisable to declare the usual quarterly dividend on the common stock payable Dec. 1, 1920.

"A letter is being prepared and will be mailed to all stockholders in a few days setting forth the condition of the company's business and assuring the stockholders as to the soundness of their investment."

Little surprise was manifest in Akron when the Goodyear announcement was published in the Sunday morning papers. Some such drastic action was expected, and the dropping of the dividend had been largely discounted on the stock market.

It had been rumored several days before the directors met that they would either pass the quarterly dividend payable on December 1 or would reduce the annual rate from ten to four per cent.

The amount of money required to pay a dividend under the ten per cent rate, would have exceeded $1,500,000. Under the four per cent rate, over $600,000 would have been disbursed.

With the announcement by the directors, some newspapers carried copies of letters to salesmen and the trade in which it was stated that the financial condition of the Goodyear was never on a sounder footing.

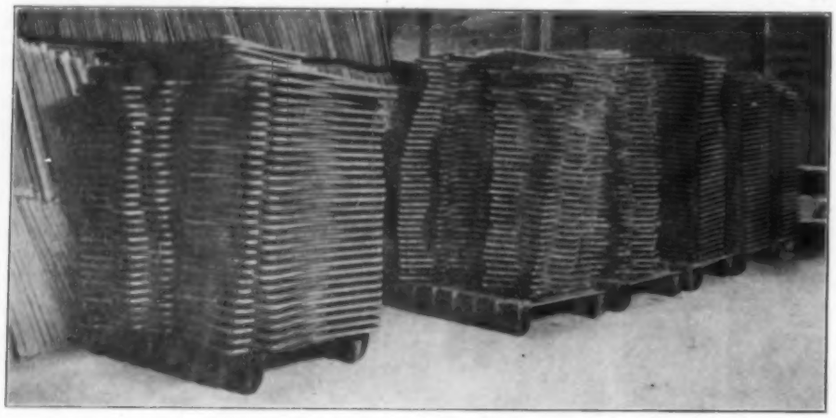
It was pointed out in these letters that the company had obtained credits of $25,000,000 from Goldman, Sachs and Company. These credits, it was said, were a direct lien against the finished products of the company and in no way interfered with the assets of the company.

Steel Lift Truck Platform

Numerous advantages are claimed for the "Prest-Steel" Lift Truck Platform distributed by the Ohio Equipment Company, Cleveland. The illustration shows the steel platforms in use in a steel plant.

The rubber industry has used these platforms to good advantage, one large tire manufacturer having over 6,000 in use with no upkeep cost. This style platform has been adopted by a number of rubber companies in preference to the wooden platform with its bulkiness and high upkeep cost.

The advantages claimed for the "Prest-Steel" lift truck platform are as follows: they are made in one piece, no seams, joints or rivets; corrugations are cold pressed; always rest even on the floor; great weight capacity; cannot warp, break, crack or burn; no maintenance cost. They are made to resist the rough usage that fast work in the factory necessitates.



"Prest-Steel" Lift Truck Platform

Victor Advertising Campaign

The advertising account of The Victor Rubber Company has just been taken over by The Akron Advertising Agency Company. It is the intention of the Victor Company to continue its present extensive advertising campaign, augmenting it from time to time by the addition of new periodicals to the list.

Assistant General Manager and Sales Manager, C. A. Swinehart, of The Victor Rubber Co., in a statement issued recently, said: In addition to our regular advertising campaign, we are going to adopt a new method of advertising Victor tires. This plan has never before been used to any great extent in the tire line, but it has proven eminently successful in advertising other products. We have tested it and found it very promising of success, to say the least. We are prepared to handle the new campaign in a way that will attract attention from coast to coast.

"For business reasons we cannot yet make public the nature of our new campaign, but we hope to be able to announce it, together with our complete plans, in the near future."

Premier to Make Mechanicals

The Premier Tire & Rubber Co., Kansas City, Mo., has discontinued the manufacture of tires and tubes and is turning its endeavor to the manufacture of rubber mechanical goods.

Akron Stock Prices

(Special Akron Correspondence)

Akron rubber shares have kept pace with most other stocks in the downward march the first half of November. Nearly all the Akron issues have hit new low marks for the present year.

Goodyear led in the rapidity of decline. Before announcement was made that the directors had decided to pass the dividend on the common stock, Goodyear common dropped as low as 35½ while Goodyear preferred dropped below 76.

Buyers of stock had discounted the action of Goodyear directors and as a result there was no break when the market opened following the announcement.

Firestone common has receded to 102, Miller to 100, Goodrich to 42 and so on down the line. In fact only inactive stocks have maintained anything like a firm level. High-priced rubber issues have been affected. General common is back to 500 asked, with no bids

Following are the quotations of November 15:

	Bid.	Asked
Firestone T. & R. com.	102	107
Amazon Rubber	...	50
Amer. T. & R. com	...	75
do 6 pct. pfd.	86¼	88
do 7 pct. pfd.	80	82
General T. & R. com.	...	500
do 7 pct. pfd.	...	90
B. F. Goodrich com.	42	44
do 7 pct. pfd.	80	82
do 5 yr. 7 pct. notes	88½	89¾
Goodyear T. & R. com.	41	42
do 7 pct. pfd.	70½	71
India Rubber com.	...	120
do 8 pct. pfd.	...	80
Mason T. & R. com.	15	17
do 7 pct. pfd.	60	64
Marathon T. & R. com.	...	4
Miller Rubber com.	100	104
do 8 pct. pfd.	86	88
Mohawk Rubber	...	150
Portage Rubber com.	...	45
do 7 pct. pfd.	55	65
Republic Rubber com.	1¼	1¾
do 7 pct. pfd.	...	40
do 8 pct. pfd.	21	22
Rubber Products	...	100
Star Rubber com.	...	110
do 8 pct. pfd.	...	100
Swinehart T. & R. com.	...	40
do 7 pct. pfd.	60	70
Phoenix Rubber com.	...	20
do pfd.	...	90
Standard Tire com.	...	120
do pfd.	...	90

Mid-West Association Banquet

The Second Annual Banquet of the Mid-West Rubber Manufacturers' Association will be held in Chicago on Tuesday evening, December 14, 1920, and President Christie has appointed the following banquet committee to make the necessary arrangements and provide entertainment: W. H. Stillwell, Chairman, Erie, Pa.; W. E. Wilson, Akron, Ohio; T. J. Carroll, Chicago, Ill.; P. P. Parker, Indianapolis, Ind.; A. C. Eide, Chicago, Ill., J. B. Longini, Chicago, Ill.

Detachable Heel in Production

Actual production of rubber products will be started in the immediate future at the new factory of the Detachable Heel & Rubber Company of Gettysburg, Pa., it has been announced by R. M. McKey, general manager of the company. Gaskets used by railroad companies will be the first product manufactured. The following week the manufacture of nailed-on rubber heels will start.

Personals of the Trade

New Mason Appointments—Kelly Promotes Smith—Fairbanks Heads Firestone Sales—Wildman Rubber Elects Officers—International Personnel Changes—Angus Now General Sales Manager

New Mason Appointments

I. C. Monroe, a man of twenty years experience in tire manufacturing has been made assistant superintendent of the tire division of the Mason Tire & Rubber Co., Kent, Ohio, to succeed J. H. Mc Gachan, whose resignation as chief chemist and assistant superintendent became effective October 15.

Mr. Monroe for a period of eleven years was connected with the Diamond Rubber Co., leaving that concern upon its consolidation with the Goodrich Rubber Co. in 1913.

While with the Diamond Rubber Co. Mr. Monroe was employed in many departments of its factory, with the result that he procured a very wide knowledge of tire manufacturing.

From the Diamond Rubber Company Mr. Monroe went to the Goodyear Tire and Rubber Company, with which concern he had been affiliated until his present appointment as assistant superintendent on October 15.

At the Goodyear Tire & Rubber Company Mr. Monroe organized the inspection sub-division of the factory office and for both the organization and development of this department Mr. Monroe was held entirely responsible, and in a period of seven years this department increased from one—himself—to an organization of 100 men, and today is one of the most important departments in the organization. In his capacity as manager of this department Mr. Monroe had the responsibility of inspection of all products both coming and going out of the plant from the crude rubber to the finished tire and their many other products.

F. H. Gorsuch, formerly with the Firestone Tire & Rubber Company of Akron, has been made chief chemist of the Mason Company.

While with the Firestone Mr. Gorsuch spent two years in the general chemical laboratory and two years in the compounding division.

He is a graduate of Oberlin College, with a degree of A. B. in chemistry and also had one year's training at Ohio State University.

Kelly Promotes Smith

Following the appointment of H. E. Gabriel, formerly manager of the Denver, Colo., branch of the Kelly Springfield Tire company to a similar position in the Cleveland, Ohio, branch of the company, C. S. Smith has been appointed as his successor.

Mr. Smith, the newly appointed manager of the Denver branch, has been connected with the Kelly Springfield Tire company for more than nine years. He came to Denver from the Philadelphia branch of the company nearly two years ago, shortly after the establishment of the Denver headquarters. He has a wide acquaintanceship with the automotive and tire situation in his section as a result of his work since that time as head salesman for the company.

Fairbanks Heads Firestone Sales

L. G. Fairbanks, who has been connected with the Firestone interests for the past seven years, recently as general

L. G. Fairbanks

manager of the Firestone Steel Products Co., has been made director of sales of the Firestone Tire & Rubber Co., heretofore handled by vice-president and director A. G. Partridge.

Wildman Rubber Elects Officers

The annual stockholders' meeting of The Wildman Rubber Company was held at Lansing, Mich., November 8th. Practically all the stock was represented in person or by proxy, and the following directors and officers were elected for the coming year: Directors: W. W. Wildman, Detroit, Mich.; L. C. MacGregor, Detroit, Mich.; C. R. Twynham, Akron, Ohio.; H. P. Orr, Lansing, Mich.;J. C. McCabe, Bay City, Mich. Officers: W. W. Wildman, president and general manager: L. C. MacGregor, vice-president: J. C. McCabe, secretary; C. R. Twynham, treasurer.

The secretary reported that work on the new million dollar plant at Bay City, Mich. was progressing in a very satisfactory manner,—that all the excavating had been completed and a contract let on November 6th so work would go forward at once on the main building, which will be 165 ft. x 365 ft., three stories and basement of reinforced concrete.

International Personnel Changes

R. J. Fitzgerald, formerly district sales manager for the McGraw Tire & Rubber Co., at Indianapolis, Ind., who joined the sales organization of the International India Rubber Corporation, South Bend, Ind., in July as special sales representative, has been appointed assistant-sales manager, succeeding C. H. Mayer, who has resigned.

Mr. Fitzgerald brought with him two former sales representatives of the McGraw Tire & Rubber Co. These are Ray Thurman, who has been appointed Western representative, in charge of International India Rubber Corporation's sales on the Pacific Slope. Mr. Thurman has successfully sold newspaper advertising space, acted as advertising manager on a number of large daily papers, learned considerable about the automobile, motor truck and rubber business through his former connections with the Studebaker Corporation, the United States Motor Truck Co., and the McGraw Tire & Rubber Co.

Claude Hartwell, who has been made special factory sales representative, in charge of Indiana, Southern Ohio, Southern Illinois, and the States of Kentucky and Tennessee, has a long and successful record as a tire salesman, and the advantage of a close personal acquaintance with the majority of tire buyers in the territory he is taking over.

H. D. Brown has been appointed sales representative with headquarters at Wichita, Kansas and will cover part of Kansas, Oklahoma, Missouri and Arkansas. E. A. Bradley has been appointed sales representative with headquarters at Lincoln, Nebraska, and will cover Northern Kansas, all of Nebraska and Western Iowa, as well as a part of Missouri. Ray L. Hause has been appointed sales representative to cover Northern Illinois and the State of Wisconsin. C. H. Fischer, who has been with the Company for some time in the capacity of sales representative, will continue to headquarter in Chicago, and cover, Michigan, Northern Ohio, Western Pennsylvania, and Western New York. F. J. Sellers has been appointed sales representative to cover North and South Carolina, Georgia, Florida, Alabama, Mississippi and Louisiana.

Angus Now General Sales Manager

Ames, Holden, McCready, Limited, of Montreal, Canada, announce that W. M. Angus has been appointed general sales manager of the Ames, Holden, McCready system. His offices will be located, as heretofore, at 1221 Mount Royal Avenue, East, Montreal.

Mr. Angus has been identified with the firm for many years, and is well and favorably known to the trade, particularly in Quebec and the Maritimes.

Ryan Returns from South America

F. C. Ryan, sales engineer for The New Jersey Zinc Company, has just returned from a trip to South America, where he was sent to investigate conditions pertaining to the use of zinc in Brazil, Argentine and other countries.

United States Makes Important Changes

Important changes in the plan of company organization were announced recently by President Charles B. Seger, of the United States Rubber Company. The new organization plan, which was touched upon in the THE RUBBER AGE, of October 25, places under unified control the manufacturing and selling activities of the two groups of the company heretofore known as the Mechanical Goods Division and Footwear Division, it creates the position of second vice-president for four of the company's executives, and it effects a new grouping of other departments and provides new responsibilities for many individuals in the organization.

Vice-President Homer E. Sawyer takes general charge of the two divisions which have been merged. Vice President J. N. Gunn will remain in general charge of Tires and Accessories.

George H. Mayo and Edward J. Coughlin have been made second vice-presidents to serve under Mr. Sawyer. Mr. Mayo will have under his general direction all sales of footwear, clothing, mechanical and miscellaneous goods, while Mr. Coughlin will have charge of the large group of factories engaged in their manufacture.

Mr. Mayo will be assisted by Charles C. Case as general manager of mechanical sales; William F. Enright, general manager footwear sales; N. Lincoln Greene, general manager clothing sales; and W. E. Barker, general manager wire sales.

Mr. Coughlin will be assisted by Myron H. Clark as general manager, footwear and miscellaneous factories, and Harlow W. Waite as general manager, mechanical factories.

Charles J. Butler has been appointed second vice-president of the United States Rubber Company, in charge of tire manufacturing. He will be assisted by George W. Seiberling as general manager of tire factories. George S. Shugart, vice-president of the United States Tire Company, remains in charge of tire sales.

Raymond S. Willis has been appointed second vice-president and will have general charge of purchasing, stocks of raw materials and supplies, and transportation. He will be assisted by William H. Marsh, general purchasing agent; George F. Hichborn, general traffic manager; and James A. Reilly, general storekeeper.

Cyrus S. Ching has been appointed supervisor of industrial relations, Charles F. Lindsay becomes technical assistant to the president, and Eric C. Burkman, executive secretary, president's office.

William G. Parsons has relinquished the title of comptroller, but will continue as vice-president with general supervision over the accounting and treasury departments. Henry B. Hubbard has relinquished the title of assistant-comptroller and has been appointed financial manager of sales. William O. Cutter, formerly assistant-comptroller, has been appointed comptroller and Harold B. Grouse and Herbert M. James, assistant-comptrollers.

Second Vice President Mayo has announced the following appointments:

Thomas J. Needham, formerly manager of the Omaha branch, manager branch store sales, Charles A. Blake, formerly assistant to manager footwear division, manager sundries sales. George E. Goodwin, manager clothing branch stores. Fred P. Lundy, formerly assistant to A. W. Lawrence, supervisor leather and felt footwear branch stores. John J. Meacham, formerly manager of the St. Louis footwear and clothing branch, manager of the Omaha general branch. C. P. Melton, formerly manager of the Dallas footwear and clothing branch, manager of the St. Louis footwear and clothing branch. Thomas P. Sullivan, promoted from assistant-manager to acting manager of the Dallas branch. Walter H. Linck, promoted from assistant-manager to manager of the Philadelphia footwear and clothing branch.

C. C. Case, general manager mechanical sales, has announced the following appointments: W. Gussenhoven, formerly central district manager, mechanical goods division, general sales manager mechanical goods, with headquarters in New York. F. B. Williams, formerly assistant to general manager mechanical goods division, manager of agricultural line, canvas belting, (including tractor belts), jar rings, plumbers specialities and molded specialties. H. L. Williamson, manager of mechanical production and sales development department, to have supervision over construction, production, changes, eliminations, or additions to mechanical lines. J. A. McIntosh, assistant-manager of mechanical production and sales development department. S. E. Abramson, formerly western manager conveyor belt department, district manager central district. E. F. Brownworth, formerly manager packing department, supervisor store stocks. H. N. Winner, manager packing department.

W. F. Enright, general manager footwear sales, has announced the following appointments:

Edward R. Bartlett, formerly manager of Philadelphia branch, production manager footwear sales. H. J. Haefelein, formerly assistant to general selling agent, distribution manager footwear sales.

Mason Opens More Branches

The Mason Tire & Rubber Co., Kent, Ohio, has opened three new branches in the western field—one in Portland, Ore., at 82 N. Broadway; one in Denver, Colo., at 1748 Broadway, and one in Los Angeles, Cal., at 1232 South Grand Ave. With the branch at San Francisco the big Pacific coast cities and their respective territories are now well covered. The carefully selected personnel of these branches consists of well seasoned tire men who are familiar with the peculiar needs and local characteristics of the coast trade and all the branches are equipped to give complete service on the entire line of pneumatic and solid tires, including the new Mason Junior Cord and two new types of solid truck tires recently brought out, which are already in active demand.

Rubber Association News

A meeting of the Rubber Reclaimers' Division of the association was held in New York City on November 9, at which time prevailing trade conditions were discussed in a general way, as a result of which a joint conference of scrap rubber dealers and reclaimers was to be held in New York on November 19. A meeting of the Hard Rubber Division is to be held in New York City on November 24.

The next meeting of the board of directors is scheduled for November 30 at New York City. The November regular meeting of the Executive Committee of the Tire Manufacturers' Division, scheduled for Wednesday, November 17, was omitted. The next meeting of this committee will be the December regular meeting on December 15.

The association has undertaken the gathering of statistics on a monthly basis from individual tire manufacturers who are members of the Tire Manufacturers' Division relative to the inventory, production and shipments of pneumatic and solid tires and inner tubes and the amount of cotton fabric and crude rubber consumed in that production, the association in turn to furnish each member participating in the arrangement with the totals compiled from the individual returns. This work is being progressed as rapidly as possible, and it is expected that, early in December, a report of total inventory, production and shipments as of November 30 will be available.

The regular annual meeting of the Rubber Association will be held at the Waldorf-Astoria Hotel, New York City, on the afternoon of Monday, January 10, 1921. On the evening of that day, the twenty-first annual dinner of the association will be held in the Grand Ballroom at the Waldorf-Astoria. Information will soon be transmitted to members of the association concerning the price of dinner tickets, names of speakers, etc.

Mid-West Association Bulletin

The Mid-West Rubber Manufacturers' Association recently issued the following bulletin relative to further changes in the domestic bill of lading form:

Nov. 5, 1920

To Members:

Our members are advised not to have a large supply of domestic bill-of-lading forms printed until the Interstate Commerce Commission has finished its revision of the present form to conform to the changes that have taken place in the transportation act.

Certain changes in the domestic bill-of-lading form were made some weeks ago and were effective October 10 last. Railroad agents have been provided with a stamp that will take care of these changes.

Should your supply become exhausted before hearing definitely that the further changes have been made, we would suggest that you communicate with this office on the matter.

We will endeavor to advise you immediately when the form has been definitely decided on by the Interstate Commerce Commission.

Faith in Automotive Industry

At the regular monthly meeting in New York on Friday, October 15, 1920, of the board of directors of the Motor and Accessory Manufacturers Association, representing approximately 360 makers of automobile units and equipment, President C. E. Thompson, issued the following announcement:

We have absolute confidence in the fundamental soundness and stability of the automotive industry. A comprehensive survey of conditions throughout the country and first-hand statements from various members of the Association indicate that there are now marked signs of improvement in the automobile field. The automobile industry has naturally been affected, as have other industries, by the economic re-adjustment of business conditions coming as an aftermath of the war. This process has been most orderly and constructive, and the basic strength and essential character of the automotive industry are beyond question.

Governor W. P. G. Harding of the Federal Reserve Board, stated at a meeting of the Motor and Accessory Manufacturers Association in Cleveland last month: "There are four great fundamental essentials—food, fuel, clothing and shelter; and in order to provide these necessities, transportation looms up as an absolutely important factor."

The automotive industry is a transportation industry. The sound progressive development of the automotive industry is assured by the enormous transportation needs of this country.

The replacement business of motor vehicles looms up as a factor of paramount importance. This replacement business alone, even when coupled with only an average increase in the normal demand for new motor vehicles, is of sufficient size to keep the industry in a healthy and progressive condition.

The automobile is today a deep rooted factor in the economic and social structure of America. The demand for motor vehicles will continue and will grow in proportion to the transportation requirements of the Nation.

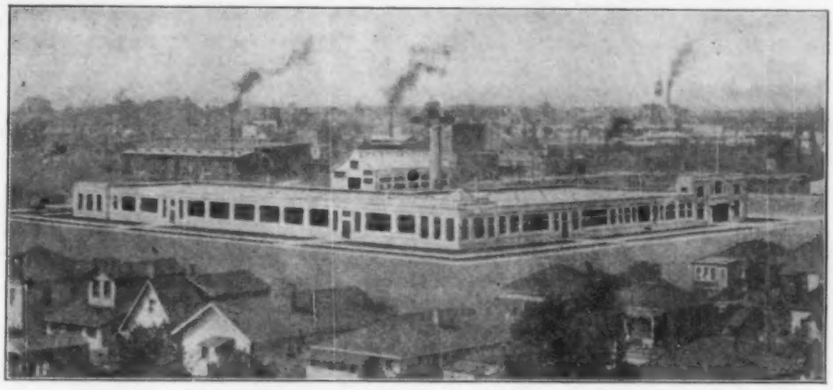
Newtown Tire Plant Purchased

Announcement was recently made that J. A. E. Whyte, formerly with a number of Canadian concerns and more recently with the Batavia Tire & Rubber Company, later treasurer of the Century-Plainfield Tire Company, and B. J. Smith who received his first training in the tire industry with the Fisk Rubber Company and more recently with other tire concerns, have entered into a contract to purchase the land, buildings and equipment of the Newtown Tire Company, Inc., at Elmhurst, L. I.

It was stated that the consideration was about one quarter of a million dollars. The main building is 300 x 100 feet and it is expected to be completed next January. Production will probably start in March.

An interesting phase of this transaction is the statement that before operations are begun this new concern has already booked $800,000 worth of business for 1921 without taking into consideration the improved market conditions which will greatly increase this amount.

The factory is very advantageously situated in that it is within twenty minutes of New York City, thus permitting of an economical operation because most of the business at the start will be in and about New York. A spur line of the Pennsylvania Railroad will lead directly to the plant. It is expected that the initial production will be 135 cord tires daily to take care of the business on hand. The manufacturing schedule for fabric casings and tubes has not been determined at this date. The capacity of plant will be 550 tires daily.



First Unit of Coast Tire & Rubber Co., Oakland, Cal.

McGraw Reduces Prices

A typographical error appeared on page 109 of the Rubber Age, issue of November 10th, where it was stated that the McCreary Tire & Rubber Company had effected a reduction in tire prices. This should have read McGraw Tire & Rubber Company.

Rubber Industry Statistics

The Rubber Association of America on November 8th, issued to its members statistics compiled from Questionnaires Nos. 101 and 102 covering the first and second half of the year 1919 respectively, the figures having been consolidated in order to present totals for the entire year.

Although the data presented in the compilation is based upon returns from only 160 manufacturers the association states that the dependable conclusion may be reached that the sales value of the total product of the industry in 1919 was at least $1,250,000,000 and that the consumption of crude rubber in the industry was well over 200,000 long tons.

The association has also issued Questionnaire No. 103 in duplicate to its members. This calls for certain information regarding the business of each company for the first six months of 1920 similar to the information requested in Questionnaires Nos. 101 and 102.

Following are the statistics compiled from Questionnaires Nos. 101 and 102 covering the year 1919:

Number of firms to whom questionnaires were sent	283
Number of firms responding	167
Number of firms reporting statistics	160

AVERAGE TOTAL DAILY NUMBER OF EMPLOYEES
177,833

	Reported by Mfrs. who also reclaim	Reported by Reclaimers solely	Total	Approx. Amt. Scrap used per pound of Reclaimed Produced
No. of pounds Reclaimed Rubber Produced from Raw and Cured Scrap	62,010,311	107,494,619	169,504,930	1 lb., 5 oz.
No. of pounds Scrap Rubber (including raw and cured scrap) Consumed in Production of Reclaimed Rubber	79,107,432	151,877,814	230,985,246	

NUMBER OF POUNDS OF CRUDE RUBBER COUSUMED IN THE MANUFACTURE OF RUBBER PRODUCTS AND TOTAL SALES VALUE OF SHIPMENTS OF MANUFACTURED RUBBER PRODUCTS

Products	Number of pounds Crude Rubber Consumed		Total Sales Value of Shipments of Manufactured Rubber Products	
Tires and Tire Sundries:				
Automobile and motor truck casings	240,904,417		$194,454,021	
Automobile and motor truck tubes	54,025,307		39,550,163	
Solid tires	27,989,361		13,111,246	
Other tires and tire sundries	14,472,416		13,606,740	
*TOTAL—Tires and Tire Sundries		338,521,064		$674,249,726
Other Rubber Products:				
Mechanical Goods	23,819,144		$77,487,032	
Boots and Shoes	29,042,262		76,539,565	
Other Products	14,646,895		59,382,707	
*TOTAL—Other Rubber Products		67,712,158		291,835,550
GRAND TOTAL—ALL PRODUCTS		406,231,563		$966,085,276

*NOTE—It should be noted that the above totals of "Tires and Tire Sundries" and "Other Rubber Products" include some figures which are not shown under the various items, which is due to the fact that some of the reports received were not itemized.

The Rubber Situation

A recent issue of the Wall St. Journal published the following interesting commentary upon the rubber situation:

While the same factors have operated to affect the tire business as affected the automobile business, it was the activities of the dealers in "seconds" which probably precipitated the worst difficulties of the tire makers. Had the dealers in tires shown the same aggressiveness in forcing the sales of their wares as was shown by the handlers of "seconds," tire manufacturers say there would not have been the same large stocks of tires undistributed throughout the country as exist at the present day.

According to an official of one of the leading companies there are probably 10,000,000 to 11,000,000 automobile tires unsold in the United States. Distribution of hundreds of thousands of these tires has been delayed by the sale to car owners of seconds by dealers in that class of shoe who were quick to see the opportunity presented by the threat of depression indicated by the cessation of free selling of motor cars.

Stock on Hand

Assuming unsold stocks of 11,000,000 tires in this country d'vided between the makers and the dealers, the situation is not quite so desperate as bears on tire shares would have the public believe. Purchase of a single tire by each car owner at this time would reduce the volume of unsold tires by something like 7,500,000, leaving 3,500,000 tires to supply the needs of those who are actually in need of more than one tire, whose number is large; to furnish equipment for new cars, which are being produced in the smallest number in years; and to replace tires which through accident or otherwise fail to give the miles of use which might reasonably be expected of them.

Whether the current production of tires would be sufficient to cover equipment of new machines and replacing tires destroyed by other than plain everyday wear is a problem which cannot be solved at this spot on the map. But this much is plain to any one who takes the pains to watch the condition of tires—that an exceptional number of automobile owners are making use of tires which under even ordinary circumstances would be regarded as scarcely worthy of the attention of the junk dealer. It is not unusual to observe from the vantage point of the front seat of one car a piece of tire flopping with every revolution of one of the rear wheels of a car immediately in front. Tire makers in Akron say the state of the tires on cars in this city is "disgraceful."

Throughout the Middle West the proportion of cars in use which carry no spare tire is large.

Number of tire dealers throughout the country is estimated at 60,000. If each dealer carried a stock of only 100 tires 6,000,000 of the estimated 11,000,000 tires unsold would be accounted for.

The big tire manufacturers are loath to admit that there has been any undue enthusiasm on their part in building for a larger demand for their wares than the past six months has disclosed. Rather they are disposed to attribute it to the same indefinite and inexplicable "financial situation" which has played hob with the parent industry—the making of automobiles.

When one turns to statistics of automobile registration and gasoline consumption it must be admitted that there is some justification for being puzzled at least by the extent of the slump in their business. For instance, from January 1 to July 1 this year motor car registration increased 23 per cent; gasoline consumption in the same time gained 27 per cent. Obviously there was neither let-up in the use of cars nor cessation of the putting of additional cars into operation.

Lack of Consumer Buying

Leaving out of consideration any question of unwarranted expansion of the tire building business, a leading Akron banker advances two suggestions toward explaining the current failure of car owners to buy tires freely:

1. Appreciation by the consumer that the tire makers were turning out a much better article than ever before making replacements less frequent. 2. Failure of an imaginary charted line of Sunday and holiday riding to indicate any appreciable upward tendency due to the disinclination of hardened car owners to participate in the unpleasantness attendant upon congested traffic.

Just how significant the second of these theories may be is probably a matter of individual opinion. It is a fact, however, that an increasing number of car owners to whom automobiling has ceased to be a novelty avoid using their machines on such days as far as possible. Such a policy postpones to a later date the replacement upon which the tire manufacturer counted.

There is no gainsaying the fact that the guaranteeing of 6,000 miles for fabrics and 8,000 for cords has cut down the frequency of replacement, since to make such a policy profitable the manufacturer has had to make tires certain to exceed such mileage. It has been a most attractive policy from the consumer's standpoint but it is a question whether in turning out so good a tire and in expanding his plants at the same time the manufacturer has taken into consideration the fruits of that policy.

Conditions Will Improve

Leading Akron bankers are agreed that the worst has been seen in the tire situation. They not only do not look for the operations of the biggest manufacturers to make further downward lines but expect them to record upward lines albeit the angle of the rising slant may be a broad one for many months rather than a sharp one. They feel that it is not unlikely to be five or six months before things are restored to normal; it may require that length of time to reduce inventories to a reasonable basis. One of the leading tire makers agrees that it is likely to be March before the factories are running on a full time basis.

Support Production Cut Plan

The campaign to curtail the production of rubber is being vigorously agitated. At a recent stockholders' meeting of the Sablas-North Borneo Rubber Co., Ltd., Chairman Sir West Ridgeway said:

"The twenty-five per cent restriction in output, which is being carried out by nearly every rubber estate throughout the East, is generally regarded as likely to increase the market price of rubber—that is its object—and therefore the balance of our crop, which has not yet been sold forward under contract, should realize a somewhat higher figure than the present market rates.

"With regard to this subject it gives me great pleasure as a member of the council of the Rubber Growers' Association, to tell you that the movement inaugurated by the association has met with great success. Over eighty per cent of the producing acreage owned by members of the association domiciled in the United Kingdom have given their adherence to the scheme.

"In addition to this seventy-five out of 111 producing companies of the Association of Malaya have given their adherence and the Japanese Association, representing over 65,000 planted acres, have also given their assent. So that you see the scheme has received very powerful support, and the position of any company which holds aloof and which yet benefits by the enterprise of other companies will not be pleasant.

"Moreover, the restriction of twenty-five per cent only affects six months of the current year, that is to say, from November to April, so that as practically the whole of this year's crop, apart from forward sales is still unsold, we are likely to reap the advantage of an enhanced market price on the whole of it."

At a meeting of the council of the Rubber Growers' Association held recently, it was announced that over eighty-nine per cent of the producing acreage owned by the members of the association domiciled in Europe was included in the signed forms of assent already received to the recommendations for reducing the output of rubber and the scheme, therefore, became operative on November 1. The council further announce that they are satisfied that the policy will be adhered to by an adequate proportion of producers outside the association.

Rubber Corporation Branch Moves

Announcement has been made by the Rubber Corporation of America of the removal of its Kansas City, Mo., branch from Twenty-first and Grand avenues to larger quarters at 717-19 Wyandotte street.

Tuttle Leaves Firestone

John B. Tuttle, former chief chemist of Plant II, Firestone Tire & Rubber Co., Akron, Ohio, has severed his connection with that firm and has opened an office at 68 Bank St., New York, as a consulting chemist and rubber technologist.

Why Dunlop Went to Buffalo

Considerable speculation has been aroused as to why the plant of the Dunlop Tire & Rubber Corporation of America was located at Buffalo, N. Y. The following account will give those who are interested a more exact idea of just where the Dunlop factory is and also illustrate some of the reasons why it is there. Two things are quite evident from this account—one being the large number of railways entering the city, and the other the fact that the Dunlop plant is not only on one of the main rail routes, but also on what is destined to be a great water highway as well.

When the chief engineer of the Dunlop Tire & Rubber Company, Ltd., came to United States early in 1919, to select a site for the American company, he did not have Buffalo on his list, but noticing its strategic location on the map, he investigated this city upon his own initiative, the result of which was that in the analysis of a broad survey the company decided that out of twenty different possible locations Buffalo had more points of advantage for an automobile tire manufacturer than any other city.

One of these advantages as noted is the matter of rail transportation. There are some fourteen lines of railroads operating into Buffalo and half the population of the United States live within a circle whose center is Buffalo and whose radius is one night's journey by rail.

Buffalo is within easy access of power, fuel, and markets, including New York City, the greatest port of entry and the largest rubber importing port as well.

The factory is situated in the town of Tonawanda, N. Y., one mile north of the Buffalo city limits on River Road, which runs parallel with Niagara River, being separated from it by the Erie Canal and a strip of foreshore. The company has acquired land fronting on the river, which will give them access to wharves, so that they can take advantage of any new developments in water transportation; and as is well known, plans are in prospect which may ultimately make all of our Great Lakes cities ports of entrance and exit for ocean borne commerce.

Aside, however, from any such possibility as that, there is the practical certainty of future water transportation to Chicago ,Detroit, Cleveland, and New York which are all great tire distributing points.

In the matter of acquisition of sufficient land, character of land, residential and housing opportunities, educational and commercial facilities, labor supply, and so on, Buffalo is at least as well equipped as any other city considered.

In view of the large amount of power required in a rubber works, it is a point of importance that in Buffalo there are two ample sources of power supply, both of which are turned into the same mains. Manufacturers have available the supply from the Great Niagara Falls plant, as well as the new plant of the Buffalo General Electric Company, which was built during the war as a war measure and is now proving to be quite as valuable in peace times.

The Buffalo Chamber of Commerce is of the opinion that the city will, in a few years, be one of the chief rubber goods manufacturing centers in America, and the tire and rubber and reclamation plants erected and established there give some support to such an opinion.

Developments of Buffalo in the last year or two are quite impressive both as to the reputation and importance in size and output of the many manufacturing companies in various lines which are locating their headquarters or principal factories there.

The Dunlop Corporation has purchased land extending to the Niagara River. Besides providing an abundant supply of water, the river will afford a convenient location for docking facilities.

Allsteel Tire Incorporates

Dispatches from Columbus, Ohio, announce the incorporation of the Allsteel Tire and Rubber Company for $250,000.

Incorporators of the concern are Andrew Huetter, president; Richard Burkhardt, of the Stomps-Burkhardt Company; George H. Kramer, of the Kramer Brothers foundry; A. J. Pocock, vice president and general manager of the Dayton Pump Manufacturing Company and H. Knapp.

In addition to tires and inner tubes, the company plans to manufacture a new metallic air bag, used in the manufacture and vulcanizing of tires. The air bag is the invention of Mr. Huetter.

The home of the new concern will be located on a tract of ground purchased by the company and known as "Artyr Park." Work on the new factory is expected to begin early next year, according to Mr. Huetter.

Climax Tubes in New York

The Goodluck Rubber Co., Buffalo, N. Y., has arranged to purchase rights to manufacture Climax tubes and Maxo tires in New York State for $30,000,000 according to a recent announcement by Climax Rubber Co. officials.

Men interested in the expansion of states also are after similar rights, it was said.

The Climax factory, recently purchased at Delaware, soon is to be expanded, officials of the company said. The general offices of the concern will be maintained there, it was added. Frank B. Wilson, publicity director, will remain in Columbus.

New Ames Holden Plant

The fact that Canada is the world's second largest producer of automobile tires, has been frequently quoted to prove her great national prosperity and the splendid initiative of her small population. It is a splendid fact, but unfortunately Canada does not reap all the benefits of her tremendous productivity in tires, United States and other interests are heavy beneficiaries. However, an important step in restoring the balance in Canada's favor, has been taken by the Ames Holden Tire Company Limited

This company's tire plant but recently completed at Kitchener, Ontario, is now producing both fabric and cord tires which are giving extraordinary mileage results—competing with great success over the worst roads in the Dominion, with tires of American parentage. It is a factory "modern-to-the-minute," located in the busiest section of Kitchener, unusually well served by railways, capable of almost unlimited expansion. It is lavishly equipped with the finest machinery that money can buy. It is staffed by Canadian experts who have graduated from "the plants of the invaders," and who are familiar with every new development in tire construction.

PLANT OF AMES HOLDEN CO., LTD., KITCHENER, ONTARIO

Such matters of policy as far as they relate to sales, come under the direction of E. C. Kabel, who for several years was in charge of the tire factory of the Dominion Rubber System at Kitchener. He is one of the many "forces" which have been brought together on the expert side of the Ames Holden organization and his wide knowledge and matured judgment is being devoted toward the one great aim of the company: "To build and market better tires."

British Protest Tire Imports

Sharp protests have been entered in the British house of commons against the continued importation of large quantities of American manufactured tires to Great Britain, in the face of virtual stagnation in the British rubber industry, according to advices to the Department of Commerce.

A member told the board of trade that thousands of British rubber workers had been discharged, although 90,000 American tires were imported during September.

The situation, if continued, would destroy the British tire industry, it was declared.

The board of trade said the situation was being investigated.

Exports of Rubber for September

Statistics recently issued by the Bureau of Foreign and Domestic Commerce of the Department of Commerce, Washington, D. C., indicate that exports of rubber manufactures and insulated wire and cables from the United States during the month of September 1920 totalled $7,770,855. This does not include exports to Porto Rico and Hawaii which amounted to $231,919. The former figures show an increase over those for August 1920 when exports totalled $6,193,987. Exports to Porto Rico and Hawaii have fallen off as the figures for August amounted to $436,442.

The value of articles exported, not including Porto Rico and Hawaii were as follows: Belting, $258,065; hose, $319,445; packing, $136,375; boots, $92,916; shoes, $819,853; druggist's rubber sundries, $137,400; soles and heels, $77,494; automobile casings, $3,883,923; inner tubes, $446,352; solid tires, $271,572; all other tires, $78,597; all other manufactures of rubber, $613,921; insulated wire and cables, $635,641. Exports to Porto Rico and Hawaii were as follows: belting, hose and packing, $17,662; automobile tires, $163,914; all other tires, $6,100; all other manufactures of rubber, $44,243.

Opportunities for Export Connections

The following Foreign Trade Opportunites have been reproduced from Commerce Reports recently issued by the Bureau of Foreign and Domestic Commerce at Washington. Reserved information may be obtained from the Bureau and its district and cooperative offices by duly registered firms and individuals upon written request by opportunity number. A list of those offices is subjoined below:

Opportunity Number:

33971.—A commercial agency firm in GERMANY desires to be placed in communication with exporters with a view to securing their representation in dental supplies. No reference offered.

33983.—The director of a firm in ENGLAND who has been in the United States is about to return and desires to purchase or secure an agency for raw materials of all kinds, especially those kindred to the paint, varnish and rubber trades, and drugs and chemicals. Quotations should be given f.a.s. Atlantic ports or c.i.f. English ports. Payments to be made in New York or in London against documents. References.

34013.—An engineering equipment company in WALES desires to purchase leather and balata belting. Quotations should be given c.i.f. Welsh ports. Reference.

34040.—A commercial agent from the Far East who is at present in the United States is about to return to INDIA and desires to secure an agency for the sale of mill supplies, rubber goods and allied lines. Reference.

Consulate Wants Trade Catalogues

The Swansea (Wales) consulate keeps American trade catalogues for the benefit of local inquirers. It desires to keep that file as complete and as up to date as practicable. To that end it requests interested American firms to send forward for filing copies of their latest catalogues and also, where possible, price lists and trade discounts. These latter are important, even though they be only approximate. The following are the general lines of trade for which it is thought catalogues may be most useful: druggists supplies, raincoats, shoes, sporting goods.

American-made goods in most of these lines are already handled upon this market.

This district is one of the important industrial centers of Great Britain. It leads in anthracite mining, steel, tin-plate, galvanized-sheet, and spelter manufacture, the smelting of ores, and the making of copper. Swansea is an important seaport. Agriculture, though secondary, is also important. The population of Swansea is 160,000 and of the supporting country 600,000.

Exports from Straits Settlements

Total exports of rubber from the Straits Settlements for the first eight months of the present year were 90,929 tons, as compared with 99,476 tons in 1919 and 45,407 tons in 1918 during the corresponding period . There has been a considerable fall in the price of tin, rubber and local products generally, with the result that the money market has tightened, but no commercial failures of any importance have been reported and the old established houses appear to be in a prosperous condition.

The native dealers and bazaars seem to have been overbuying to a certain extent and are endeavoring to reduce their stocks by conducting cash clearance sales.

Correcting a Misunderstanding

The Rubber Age desires to correct misleading impressions which might have been derived from the article entitled "Kelly-Springfield Earnings," which appeared in the issue of October 10th. This article should have read as follows: The Kelly-Springfield Tire Company made net earnings of $3,532,088 last year, compared with $4,589,765 in 1918. After deductions of interest, dividends on preferred stock but not Federal taxes for 1919, the earnings for the year 1919 amounted to $2,920,568, or 54½ per cent on the $5,361,973 of common stock outstanding. Dividends of 16 per cent in cash and 9 per cent in stock were paid, leaving a balance of profit to be transferred to surplus account of $1,665,381. However, at the end of the year the surplus of the company amounted to $8,641,553, which represented a decrease of $989,468 as compared with the beginning of the year. This decrease was caused principally by the payment of $2,657,492 for income and excess taxes for the year 1918. The surplus and capital stock of the company indicated a book value of $66 for each share of common stock of $25 par. Part of this amount represents good will—just how much is not shown.

Rubber Imports for October

Statistics issued by the Rubber Association of America, Inc., regarding crude rubber importations during October show a falling off when compared to the October 1919 figures. Importations for October totalled 10,639 tons while those for October 1919 amounted to 14,036 tons. Total importations for the ten months ending October 31 were 203,612 tons an increase over the corresponding period for 1919 when imports amounted to 156,796 tons. Following are the statistics:

PLANTATIONS

FROM	TONS
Rotterdam	2
London	58
Singapore	6,151
Colombo	1,436
Medan	256
Batavia	24
Sourabaya	66
Tandjong Priok	219
Penang	484
Pt. Dickson	44
Japan and others	19
	8,759

AFRICANS

FROM	TONS
Liverpool	9
Spain	18
	27

CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	17
Guayule (Mexico) By rail Eagle Pass	223
	240

PARAS

Manaos	881
Para	553
Montevideo	89
Iquitos	90
	1,613

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

	TONS
Waste	425
Balata	33
Miscellaneous Gums	498

COMPARISON 1919-1920

	Oct.— 1919	Oct.— 1920	Total Importations 10 months ending, Oct. 31st. 1919	1920
Plantations	10,143	8,759	131,853	181,561
Paras	3,423	1,613	20,060	16,586
Africans	312	27	2,036	3,783
Centrals	51	17	1,135	680
Guayule	11	223	1,453	957
Manicoba and Matto Grosso	96	..	259	35
	14,036	10,639	156,796	203,612

ARRIVALS PLANTATIONS FOR OCTOBER, 1920, SHOWING PORTS OF ORIGIN AND ARRIVAL

FROW	ARRIVED AT	TONS
Singapore	New York	6,151
Penang	New York	484
Batavia	New York	24
Sourabaya	New York	66
Japan and others	Seattle	19
Medan	New York	256
Tandjong Priok	New York	219
Colombo	New York	1,436
Port Dickson	New York	44
London	New York	58
Rotterdam	New York	2
		8,759

ARRIVALS OF PLANTATIONS BY PORTS

Atlantic Ports:		
New York	8,740	
Pacific Ports:		
Seattle	19	
		8,759

Bergougnan Rubber Pays Dividend

The Bergougnan Rubber Corporation, Trenton, N. J., manufacturers of Bergougnan cord and fabric pneumatic tires for automobiles, motor trucks and motorcycles, has paid its usual quarterly dividend of 1¾ per cent on its preferred stock for the quarter ending October 31, 1920.

MARKETS

Manufactured Rubber Goods

NEW YORK, NOVEMBER 20, 1920

Rubber goods manufacturers are holding to their conservative policy of curtailed production, and operations are still slackened down to almost a standstill in many lines. The general aim of the producers is to reduce present stocks of manufactured goods as much as possible, in order that the new season may open up next year without leaving present high-cost goods on dealers shelves to compete with the stocks to be turned out during 1921.

The question of prices is attracting a good deal of attention at the present time. Most of the leading manufacturers have reduced their prices, following the downward trend of the market for the manufactured goods. Although some of these producers have taken heavy losses on their high-priced raw materials, they are gradually working these stocks out, and next year will be in a position to work on the cheaper raw materials now offering in the market.

Manufacturing costs are falling in many lines. Prices for raw commodities entering into the manufacture of rubber goods, such as; chemicals and compounding materials, fabrics, and crude rubber have been steadily falling. It is believed now that labor costs will also come down. While the rubber manufacturers have not yet made any effort to reduce the pay of their help in a general way, it is held that present wage scales cannot be maintained under the order of things that is now to come. Manufacturers in other lines have been successful in their efforts to get cheaper labor, and there is no reason why the rubber trade cannot do the same.

AUTOMOBILE TIRES

Numerous price reductions on automobile tires have followed the cuts announced a short time ago by two leading manufacturers, and the scale of tire prices seems at last headed downward. While a little better inquiry for tires at retail is reported to have followed the announcements of lower prices, the volume of business in general has not picked up appreciably, and manufacturers do not expect a noticeable improvement this year. The lower prices now ruling are expected to help move present stocks from dealer's shelves, and clear up the present unsold spot stocks to some extent.

No general resumption of manufacturing activities has been noted in the tire manufacturing districts of the West, but producers are of a distinctly more optimistic frame of mind. Talk in the trade centers on the possibilities of next spring's business, and manufacturers are counting upon an active market during the coming season. Present reduction in manufacturing output, together with the small stocks in the hands of distributors, may make for a shortage during the early part of the 1921 season.

BOOTS AND SHOES

Dullness in the shoe manufacturing industry, together with a falling off in business for the shoe repairing industry of the country, has hit the rubber heel business to some extent, and sales have slowed down. The set-back is only a temporary one, however, in the minds of the trade and manufacturers are looking for an increase in business in the near future.

A routine business in rubber and composition heels is being done at the present time. Demand has fallen off to some extent, owing to the low market prices now ruling on sole leather.

Manufacturers report a fair business in rubbers, rubber boots, and arctics, but state that buying this year is not "up to snuff," dealers operating on a hand to mouth manner in most cases.

MECHANICAL GOODS

Operations in this branch of the market have slowed down to some extent manufacturers working in many cases only on current orders. Prices on raw materials entering into the manufacture of mechanicals are steadily declining in several markets, and the producers do not care to operate in a large way until prices are more stabilized.

Cotton duck prices are showing much weakness, and manufacturers of hose and belting are keeping in close touch with the market. Prices at the present time are materially under those ruling a few months ago having declined more than 33 1/3 per cent in some instances. Demand for finished belting is slow and irregular at the present time. Hose is also selling slowly.

With numerous new freight cars being built for the railroads, some orders for airbrake hose and coupling are reaching manufacturers, but nothing in the way of a concerted buying movement is in evidence at the present time.

MISCELLANEOUS

Druggists' sundries are meeting with a fair sale, but the market lacks the snap usual to this season of the year. Manufacturers are inclined to hold down production to bare needs at the present time, owing to uncertain market conditions. A fair export business is being booked along routine lines.

Rubber toy makers are doing a good business, and many lines are appearing in the Christmas showings of the department stores and toy shops.

Cottons, Yarns and Fabrics

New York, November 20, 1920.

Further declines in the raw cotton market have transpired during the past fortnight and the market has been carried to new lows for the movement from day to day. Spot cotton in the New York market has sold down to 17 cents per pound, while for future delivery the market is down to 15.85 cents per pound, this price ruling on cotton for delivery next October.

Numerous shut-downs in different mill centers of New England have had an adverse effect upon the market, and with the consumption of cotton showing a steady falling-off, bull interests in the market are getting discouraged. Official figures for the American consumption during October, as compiled by the Census Bureau, make the month's use of cotton, not counting linters, at only 399,837 bales, as compared with 457,647 in September of this year, and 556,041 bales in October, 1919.

New crop prospects in the South are somewhat dubious. In some sections of the belt the holding movement is progressing steadily, growers picking and warehousing their new crop cotton, refusing to sell at present low levels. Should this holding campaign spread, it is believed that a drastic reduction in 1921 acreage would be the result. This is just what the leaders of the Southern farmers' cooperative organizations are now trying to bring about.

SEA ISLAND COTTON

The sharp falling off in Sea Island cotton production is graphically illustrated by the Government's figures on October ginnings, which place the ginning for the month at only 568 bales, as against 3,203 bales for the same month in 1919, and 16,032 bales for October, 1918. The crop this year has suffered somewhat from boll weevil attacks and unfavorable weather, and is such a small one that it does not figure prominently in the tire fabric market.

ARIZONA-EGYPTIAN COTTON

Growers in the Southwest, through the Arizona-Egyptian Cotton Growers Association, are doing their best to hold the 1920 crop of Pima cotton for a higher market, and some progress has been made in picking and warehousing the 1920 long staple stock, holding it off the mar-

ket. Demand for the cotton from spinners is at a very low ebb at the present time, due to lack of demand for the finished cotton goods, and it is reported that spinners have sufficient stocks on hand to take care of their needs until well after the turn of the year. Total ginnings of Arizona-Egyptian cotton during October were 23,028 bales, as against 14,080 bales last year.

EGYPTIAN COTTON

Egypt's 1920-21 crop of long staple cotton is estimated at 612,000,000 pounds by the American counsel at Alexandria. Futures are not selling well at the present time, January contracts offering at 44.50 cents per pound. Buyers from the United States are not showing much interest in the situation as yet, owing to the sluggish condition of the tire market here.

TIRE FABRICS

Stocks of tire fabrics are moving in a very sluggish manner. The market is still nominally held, leading sellers having withdrawn their prices on all varieties. While spinners' representatives are not quoting in the open market, they are booking business at "the market" these prices being determined between buyer and seller for each individual sale. It is expected that when the market finally opens up, quotations will be radically lower than those ruling at the top last season, when the demand for tire fabrics exceeded the supply. Lower prices on all grades and varieties of raw cotton, together with cheaper labor, and a general lowering of overhead, will make for cheaper prices on all cotton fabrics.

HOSE AND BELTING FABRICS

Weakness in all lines of cotton ducks continues, and second hand holders of ducks are putting their stocks on the market at prices materially lower. Single filling is quoted at 20 to 22 cents per yard, with double filling held at 24 cents. Enameling is quoted at 50 to 54 cents per pound, under a very light demand. Shoe ducks are held at 60 cents per pound by most sellers. Hose and belting ducks are selling down to 40 cents per pound in second hands. The general price uncertainty in this branch of the market is keeping manufacturers of hose, belting and other mechanical goods out of the market. It is believed that when prices finally reach their low, and become stabilized to any extent, that buying will pick up.

DRILLS, SHEETINGS AND OSNABURGS

Additional price declines on drills and sheetings have been recorded, and the market is steadily declining to still lower levels. As is usual in a declining market, buyers are holding off and operating in a hand to mouth manner. This lack of buying interest has brought many forced offerings of cotton goods to the surface, and buyers who must take stocks are getting many "good buys" of this sort. Sales at Fall River are still very low, and cotton manufacturers at many New England points are not turning a wheel. Manufacturing costs are being reduced steadily, both raw materials and labor declining for those mills still operating.

TIRE FABRICS

17¼-ounce Sea Island, combed, sq. yd.	Nominal		
17¼-ounce Egyptian, combed	—	@	—
17¼-ounce Egyptian, carded	—	@	—
17¼-ounce Peelers, carded	—	@	—
17¼-ounce Peelers, combed	—	@	—

DUCKS

Belting (pound basis) lb.	.40	@	—
Hose (pound basis)	.40	@	—
*Enameling	.50	@	.54
Shoe Ducks	.60	@	—
Single filling yd.	.20	@	.22
Double filling	24.	@	—

*Price varies according to width.

DRILLS

37-inch 3.25-yard yd.	13½	@	—
37-inch 2.75-yard	—	@	—
37-inch 3.00-yard	.13½	@	—
37-inch 3.50-yard	.11	@	.11½
37-inch 3.95-yard	.09½	@	.10

SHEETINGS

40-inch 2.35-yard yd.	Nominal		
40-inch 2.50-yard	.16	@	—
40-inch 2.85-yard	.12½	@	.13½
40-inch 3.15-yard	.17	@	—
40-inch 3.60-yard	.11½	@	.12
40-inch 3.75-yard	.11	@	—
40-inch 4.25-yard	.09	@	.09½

Note—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.

BURLAPS
(Carload Lots)

	Cents	Per	Yard
7 -ounce 40-inch	—	@	—
7½-ounce 40-inch	6.00	@	—
7½-ounce 45-inch	6.10	@	6.25
8 -ounce 40-inch	—	@	—
8½-ounce 40-inch	—	@	—
10 -ounce 36-inch	—	@	—
10 -ounce 40-inch	Nominal		
10 -ounce 45-inch	Nominal		
10½-ounce 40-inch	6.70	@	6.80

* And higher, according to width.

Chemicals and Compounding Materials

NEW YORK, Nov. 22, 1920

Business in the market for chemicals and compounding materials has been conducted mainly along routine lines since early in the month. Buyers have been in the market from time to time, but were taking stocks only in small quantities, to be used to cover current requirements. Prices on most items on the list held steady during the period under review, but on some lines there was an easy feeling predominant, with the market in favor of the buyer.

Rubber manufacturers have generally remained out of the market, and there have been no important purchases for the account of the rubber industry. In many instances, prices are being maintained by support from other industries using the same materials required by rubber manufacturers.

In some lines, where supply has been unequal to the demand during the past season, producers are seizing upon the present lull in buying to make plans for the expansion of their production facilities for the season of 1921.

IMPORTS AND EXPORTS

Numerous importations of foreign compounding materials are arriving, but the bulk of these shipments are coming on consignment to consumers here, and little is reaching the open market. Comparatively little is being done in an export way at the present time. Unfavorable exchange and demoralized markets abroad contributing to the slackness. In numerous instances goods shipped abroad have not been accepted by consignees. In such cases the goods are being warehoused at the shippers' expense.

LITHARGE

Prices on litharge are generally quoted on a lower basis, despite the scarcity of stocks now prevailing. The declines in the market come somewhat as a surprise to the trade as it is known that producers are working at top speed and are actually behind in deliveries in many cases.

LITHOPONE

Trading has shown little animation during the past fortnight. Producers have caught up with their back business and are now not only in a position to take care of all current demands but are beginning to lay aside surplus stocks in anticipation of the Spring demand which is expected to start in shortly. For the present the market is firmly held at 7¾ to 8 cents per pound in double bags. In carload lots, lithopone packed in barrels is held at 8 and 8¼ cents.

WHITING

Production is barely keeping pace with the demand at the present time and manufacturers are not looking for additional business. While imported stocks are arriving in fair volume much of the foreign stuff is sold to arrive. It is understood in the trade that the market is well sold ahead in this manner. Prices are nominally unchanged.

BARYTES

Buying in this branch of the market is showing little activity at the present time and manufacturers are taking business for prompt shipment. Despite the temporary lull in buying, manufacturers are working their plants at capacity and laying aside all surplus production into reserve stocks to be used next year. The market is nominally held it $35 per ton for the prime white, and $25 per ton for off-color.

ZINC OXIDE

Curtailment of production in the automobile industry and the rubber producing industry has brought about a marked falling off in the demand. Producers are looking for an improvement in the situation early next year, and are making their plans accordingly. Prices hold unchanged as quoted in the table appended below.

DRY COLORS

Although trading is very quiet along routine lines at the present time producers are making plans for a big season next year. Prices on the general line have shown little change during the past few weeks, but reselling has weakened the market somewhat. Stocks of blacks are reported to be piling up owing to the absence of demand from the rubber trade. Stocks of German blues are offering on the market at less than asking prices on the domestic, but are not selling. This is due to the terms of sale laid down by German producers which force buyer to pay cash at port of delivery. Stocks of imported browns are light. Reds are dull and nominally unchanged. Yellows are quiet; larger stocks of French ocher arriving and meeting with a good demand.

CRUDES

Some increase in the demand for benzol has been noticed, and the market is showing more strength at 34 cents per gallon for the 90 per cent and 36 cents per gallon for crude. Naptha holds quiet at 33 to 35 cents per gallon. Phenol offering liberally at 12 cents per pound for U.S.P. A fair export inquiry for toluol is noted at the moment and the market in first hands holds at 30 to 35 cents per gallon. Xylol is moving slowly, and the market is showing an easy undertone. Commercial is quoted at 35 cents per gallon with the pure held at 42 cents.

INTERMEDIATES

Aniline is offering freely, and the market is showing weakness at 25 cents per pound. Lowering of prices to this level has brought out an improved demand. More activity is reported in the market for anthracene. Stocks are moving more freely and prices are firmly held. Little interest is being shown in the market for anthraquinone, and the market is nominally held at $2.50 per pound for the 95 per cent. Benzaldehyde is dull and nominally held. Trading in benzidine is quiet and the market holds unchanged at $1 per pound for the sulphate, and $1.10 per pound for the base. Betanapthol is easy, heavy stocks depressing the market and forcing prices to lower levels. Dinitrobenzol is reported offering down to 30 cents per pound in second hands, but producers are still holding the market at 32 to 35 cents per pound. Dimethylaniline is steady at 85 to 87 cents. Nitrobenzol is offering at 13 to 15 cents per pound. Paraphenelenediamine is quiet and held at $2.25 per pound.

Current Prices for Chemicals, Fillers, Colors, etc.

Acetone, carlots	lb.	.15¾ @	.16
smaller lots	lb.	.16½ @	.17
Acetanilid, C. P., bbls.	lb.	.35 @	.45
Acids, Acetic, 56 per ct.	cwt.	— @	—
Carbolic, C. P.	lb.	.12 @	.20
Muriatic, 20 deg.	cwt.	2.25 @	2.75
Muriatic, 22 deg.	cwt.	3.00 @	3.25
Nitric, 42 deg.	cwt.	8.00 @	8.25
Nitric, 40 deg. cwt.		7.25 @	7.75
Sulphuric, 60 deg. car lots	tons	17.00 @	—
Sulphuric, 60 deg. car boys		22.00 @	—
Tartaric, crystals	lb.	.65 @	—
Aluminum Silicate		Nominal	
Aniline oil, bulk basis Contract		— @	—
Imported		Nominal	
Domestic		.25 @	.30
Antimony— Oxide	lb.	.09¾ @	—
Sulphuret, red	lb.	.22 @	.25
Sulphuret, golden	lb.	.28 @	.30
Sulphuret, crimson	lb.	.45 @	.50
Alcohol, denatured, 190 proof		— @	—
Wood, 95 per cent		1.90 @	1.95
Ethyl, 190 qroof		5.65 @	5.70
Aldehyde Ammonia		Nominal	
Ammonia, powdered		.17 @	.17½
Ammonium Carbonate, domestic	lb.	.16 @	.16½
Amyl Acetate	gal.	3.85 @	4.00
Anthracene, 80 per cent		1.00 @	1.10
Anthroquinine, 95 per ct.		2.50 @	3.50
Asbestine		Nominal	
Asphaltum, Egyptian	lb.	.20 @	.25
Domestic	ton	.30 @	.40
Barium, dust		— @	—
Sulphide	lb.	— @	—
Barytes, prime white imported	ton	Nominal	
white, domestic	ton	35.00 @	40.00
off-color, domestic	lb.	20.00 @	30.00
Southern, f. o. b. mills		23.50 @	25.00
Western, f. o. b. mills		23.50 @	26.00
Beeswax		.20 @	.55
Benzidine Base	lb.	1.10 @	1.20
Benzol, 90 per ct.		.34 @	.36
Benzol, pure bulk, 100		.36 @	.40
Blanc Fixe, dry, bbls.	lb.	.06 @	.06½
Burgundy Pitch, dom.	lb.	.08 @	.10
Foreign		.60 @	.65
Blacks, Drop	lb.	.05½ @	.15
Ivory	lb.	.16 @	.30
Carbon, gas, cases	lb.	.12 @	.30
Lampblack, R M.	lb.	.12 @	.40
Mineral blacks	ton	35.00 @	45.00
Blues, Prussian		.90 @	.95
Soluble	lb.	.90 @	1.00
Ultramarine	lb.	.15 @	.50
Browns, Umber, Turkey, burnt powdered	lb.	.05½ @	.07
American, burnt	lb.	.04½ @	.06
Cadmium, sulphide, yellow	lb.	1.50 @	2.00
Carbon, Disulphide, bulk	lb.	— @	—
Bisulphide	lb.	.08½ @	.09
Casein, C. P.	lb.	.35 @	.36
Castor Oil		.14½ @	.16½
Caustic Soda, 76 per ct.	cwt.	4.10 @	4.15
Chalk, precipated, extra light	lb.	.05½ @	.06
heavy	lb.	.04½ @	.05
China clay, domestic	ton	10.00 @	20.00
imported	ton	19.00 @	25.00
China Wood Oil, bbl.	lb.	.14½ @	.15
F.o.b. Pacific Coast		.13 @	—
Chloroform, U. S. P.		.43 @	.45
Coal Tar Pitch		— @	—
Cottonseed Oil, crude f.o.b. mills	lb.	7.55 @	—
Prime summer yellow	bbls.	10.71 @	—
Dimethylaniline	lb.	.85 @	87
Elateron		— @	—
Formaldehyde, spot	lb.	.18 @	27
Fullers Earth, powd., carload lots		17.00 @	—
Fossil flour	lb.	.03¾ @	.05
Genasco Mineral Rubber		— @	—
Gilsonite	ton	55.00 @	65.00
Glue, extra white	lb.	.35 @	.45
medium	lb.	.29 @	.34
low grade		.21 @	.25
foot stock		.19 @	.22
brown foots		.19 @	.22
common bone		.18 @	.21
Glycerene, C. P. (drums)	lb.	.23 @	.24
cans		.23 @	.26
Graphite, flake (bbl.)	lb.	.14 @	.20
powdered (bbl.)	lb.	.05 @	.10
Green, chrome, R. M.	lb.	.42 @	.70
Ground glass (fine)	lb.	.03½ @	.04
Hexamethylene	lb.	1.50 @	1.60
Hexamethyenetetramine	lb.	1.62 @	1.65
Infusorial earth, powd'd.	lb.	.02 @	.035
bolted	lb.	.035 @	—
Iron oxide, red, reduced grades	lb.	.13 @	.15
red, pure, bright	lb.	— @	—
Kaolin		— @	—
Lime, hydrated		— @	—
Lead, red, dry (casks)	lb.	.12¼ @	.12½
sublimed	lb.	— @	—
white, basic carb.	lb.	.10½ @	.11
white, basic sulp.	lb.	.10 @	.10¼
Lime flour	lb.	— @	—
Litharge (casks)	lb.	.11¾ @	.12¼
English		— @	—
Lithopone, domestic, bbls.	lb.	.08 @	.08¼
in bags	lb.	.07¾ @	.08
M. R. X.		— @	—
Magnesia, carbonate	lb.	.18 @	.19
calcined light	lb.	.60 @	.65
Magnesite, calcined, pwd.	ton	50.00 @	65.00
Magnesia, Oxide, heavy		— @	—
Light		— @	—
Extra light		— @	—
Napthalene	lb.	.10 @	.12
Nitrobenzol		.13 @	.15
Naphtha, motor gasoline, (steel bbls.)	gal.	.31 @	—
68 @ 70 degress (steel bbls.)	gal.	.38 @	—
70 @ 72 degrees (steel bbls.)	gal.	.39 @	—
73 @ 76 degrees (steel bbls.)	gal.	.41 @	—
machine (steel bbls.)	gal.	.50 @	—
Oil corn, crude factory	cwt.	11.76 @	—
corn, ref. (bbls.)	cwt.	15.76 @	—
linseed, (bbls.)		.96 @	.98
In carloads, spot		.93 @	.95
tank cars		.86 @	.88
Oil palm, Lagos	lb.	.09½ @	—
Niger		.09 @	—
pine, yellow	gal.	1.45 @	1.60
distilled	gal.	1.86 @	1.90
rapseed, refined	gal.	1.25 @	—
rapseed, blown	gal.	1.40 @	—
rosin, first rectified	gal.	.71 @	—
second run		.74 @	—
tar (commercial)	gal.	.45 @	.48
Oleum Acid, 20 per ct.	ton	28.00 @	30.00
Orange mineral, Amer.	lb.	.15½ @	.16½
imported	lb.	Nominal	
Ozokerite		Nominal	
Paraphenylenediamine	lb.	2.25 @	2.50
Petrolatum, bbls., amber	lb.	.08 @	—
pale yellow	lb.	.07½ @	.08½
Paranitrosodimethylanaline		— @	—
Parafin, refined, 118 @ 120 m. p.		.10¾ @	.10½
127 @ 129 m. p.		.09¾ @	.10¼
137 @ 140 m. p.		.11 @	.11⅛
Phenol		.12 @	.15
Pumus		.05 @	.10
Pine tar kiln	bbl.	15.00 @	—
Pitch	bbl.	9.25 @	—
Plaster of paris	bbl.	4.25 @	5.00
Red Tuscan	lb.	.15 @	.25
red (American)	lb.	.12 @	.16
Indian (English)		.14 @	.18
Standard	lb.	— @	—
Rosin (common to good)— 280 lbs.		12.85 @	—
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Rosin Oil, first rectified		.71 @	—
Second rectified		.74 @	—
Third rectified		.86 @	—
Fourth rectified		.92 @	—
Soda ash, light 58 pct.	cwt.	2.00 @	2.25
Sodium Nitrite ..96@98 pct.		.16 @	.17½
Solvent Naptha, crude, hvy.		.33 @	.35
Soya Bean Oil, bbls.	lb.	.11½ @	.12
Sellers, tanks, f. o. b. Coast		.08 @	—
Stearic Acid, single		.16½ @	—
Shellac, fine orange	lb.	Nominal	
Sulphur Chloride, drums		.06½ @	.16
Shellac T. N.	lb.	.85 @	.86
Bleached, ordinary	lb.	.80 @	.85
Bleached, boendry	lb.	1.00 @	1.05
Silex (silicia)	ton	25.00 @	40.00
Soapstone, powdered	ton	15.00 @	20.00
Starch, corn, powd.	cwt.	3.48 @	4.06
pearl		3.33 @	3.91
Jap potato, duty pd,	lb.	.06¾ @	—
Sulphur, crude	ton	— @	—
100 pounds		— @	—
roll		3.45 @	—
commercial superfine		2.50 @	2.75
Talc, American	ton	18.00 @	20.00
French	ton	30.00 @	—
Thiocarbanilid		— @	—
Toluol, pure, in drums	gal.	.30 @	.40
commercial		.30 @	.32
Tripolite earth	lb.	.01½ @	—
Turpentine, pure gum— spirit	gal.	1.12½ @	—
wood	gal.	1.10 @	—
Venice, artificial	gal.	.15 @	.16
true		3.00 @	3.10
Vermilion, English	lb.	1.40 @	1.45
American		.25 @	.30
Vorite		Nominal	
Wax, beeswax, crude yel.	lb.	.24 @	.26
refined		.31½ @	.32
Bayberry		.37 @	.39
ceresin, white	lb.	.15 @	.16
yellow		.14 @	.15
Whiting, commercial	cwt.	1.40 @	—
Gilders Bolted		1.45 @	—
Paris white, Amer.	cwt.	1.75 @	—
English cliffstone	cwt.	2.00 @	—
Xylol (gal.) pure		.42 @	.45
Commercial		.35 @	.38
Zinc Oxide, French process, red seal		.11⅛ @	.11¾
green seal		.12⅛ @	.12¾
white seal		.13⅛ @	.13¾
Leaded Grades— Commercial, lead free		.08½ @	.10
5 per ct. lead sulphate		.09 @	.09¼
10 per ct. lead sulphate		.08¾ @	.09
20 per ct. lead sulphate		.08½ @	.09
35 per ct. lead sulphate		.08½ @	.08¾
Zinc Sulphate		.03⅛ @	.04½

Crude Rubber

NEW YORK, NOVEMBER 22, 1920

Crude rubber prices are steadiy declining and the market is going to unheard of low levels, ribbed smoked sheets having sold on the spot at 17 cents per pound, a new low record for the industry. Prices on other varieties are showing similar weakness.

In many quarters of the trade it is felt that the market has now reached rock bottom and that prices can go no lower. Consequently dealers and brokers are advising their customers to buy now, taking advantage of current low selling prices. Consumers in general, however, are not acting upon this advice.

Manufacturers of drug sundries, rubber

soles and heels and other rubber footwear, and mechanical rubber goods have entered the market during the past two weeks for small lots of rubber. Generally, however, these consumers have refused to buy unless granted price concessions. It is explained in the trade that users of small quantities, such as those above, have sufficient stocks of rubber on hand to take care of their current consuming requirements, and are taking additional stocks at the present time for storage in anticipation of a higher market later on. Indeed, were it not for high money rates, it is believed that speculation of this sort would be carried out on a more extensive scale.

With the production of tires curtailed to a very large degree, tire manufacturers are generally holding off of the market. There have been some bids submitted by various manufacturers during the past few weeks, but these bids were generally about 2 cents per pound under the market, and therefore not considered by holders. Manufacturers are not making any commitments for future delivery. In some instances where future goods ordered by the manufacturers are now coming on, sellers are granting the first shipment to the manufacturers.

Although some factors in the market are very pessimistic as to the outlook, brokers and importers in the main are optimistic as to the future and are predicting a turn in the market soon after the first of the new year, as it is believed that tire manufacturers will then be in the market purchasing crude rubber for their spring and summer requirements.

Nominal bid prices governing the market are as follows:

Ceylons			
Smoked sheets ribbed, spot	.17	@	—
Smoked sheets ribbed, Jan.-Mch.	.19½	@	—
Smoked sheets ribbed, Jan.-June	.21½	@	—
Smoked sheets plain, spot	.16½	@	—
First latex pale crepe	.21½	@	—
Amber crepe, No. 1	.16½	@	—
Amber crepe, No. 2	.15½	@	—
Amber crepe, No. 3	.14½	@	—
Clean brown crepe	.14¾	@	—
Light clean brown crepe	.17½	@	—
Roll brown crepe	.14½	@	—
Grand Central crepe	.15	@	—
Africans			
Rio Nunez string	—	@	—
*No. 1 Benbuella	.12	@	—
*No. 2 Benbuella	.08	@	.10
Paras			
Up-river fine	.21	@	—
Up-river medium	.20	@	—
Up-river coarse	.14	@	.14½
Caucho ball	.15	@	—
Islands fine	.19	@	—
Maderia fine	.25	@	—
Cameta	.14	@	—
Knapsack	Nominal		
Centrals			
Corinto prime	.14	@	—
Esmeralda prime	.14	@	—
Miscellaneous			
Guayule wet	—	@	—
*Balata block Panama	.28	@	—
Balata sheets	.69	@	—
Palembang	—	@	—
Columbian Block Balata	.46	@	—
Prime Pontianac	.07½	@	—
Bangermassin	.07½	@	—

*Nominal

Scrap Rubber

November 20, 1920

Depression in the market for crude rubber continues to keep the scrap rubber industry in a semi-demoralized condition. Prices during the past fortnight have not shown any startling declines, for the simple reason that they are now as low as they can possibly go on most lines.

Buying by reclaimers has not featured the market at any time during the month of November. Production of manufactured rubber goods is at a low ebb this season, and manufacturers when taking on stocks of any kind are inclined to use the crude rubber, owing to its unusual cheapness at this time.

Stocks in the hands of wholesale scrap dealers are steadily piling up, and the jobbers are now in such a frame of mind that any reasonable bid for stocks would probably attract their favorable attention. At the present moment, sales are confined almost exclusively to very small lots, reclaimers when buying at all taking only sufficient stocks to cover their requirements.

If the reclaiming trade has any faith at all in the future of the market for reclaimed rubber, it would appear that now is the time to buy scrap stock, as a general resumption of buying, which must surely come in time, must take the market to higher levels. The unusual financial conditions, it is believed, constitute the chief drawback to business at the present time. Interest rates being charged by many banks at the present time make it cheaper for buyers to go without stocks, rather than buy them cheaply now and then lose all the advantages to be gained by current low prices in paying heavy interest charges.

Nominal prices ruling the little business being done in the local market are as follows:

	Cents per Pound.		
Solid Tires	1.50	@	2.00
Auto Tire Peelings	2.50	@	2.75
Truck Tires	2.00	@	2.25
Black Rubber	1.50	@	2.00
Boots and Shoes	4.50	@	4.75
Arctics, trimmed	3.75	@	4.50
Arctics, untrimmed	—	@	—
Tire—Automobile	1.25	@	1.50
Bicycles, pneumatic	1.00	@	1.50
Mixed Hose	.50	@	1.00
Air Brake	1.50	@	—
Inner Tubes, No. 1	8.00	@	8.50
Inner Tubes, No. 2	5.50	@	6.50
Red Tubes	4.00	@	5.00

American Rubber Patents

Issued October 19, 1920

1,355,885—To David R. Bowen and Carl F. Schnuck, Ansonia, Conn., assignors to Farrel Foundry & Machine Co., Ansonia, Conn. Rubber-mixer.

1,355,986—To John T. Lister, Cleveland, Ohio. Tire.

1,356,113—To George Joseph Reuter, Atlanta, Ga. Rubber heel.

1,356,115—To John Saul, Jersey City, N. J. Cushion-tire.

1,356,132—To Henry J. Doughty, Providence, R. I., assignor to Doughty Tire Company, Portland, Me. Method and apparatus for making tires.

1,356,173—To Clyde L. Smith and Emmett S. Webster, South Bend, Ind., assignors to Smith One Heat System, South Bend, Ind. Air-bag.

1,356,234—To August M. E. Streijefert, Norristown, Pa., assignor to Diamond State Fibre Co., Bridgeport, Pa. Sheet-rubber liner.

1,356,438—To Bruno G. Erler and Emil Roesler, Philadelphia, Pa. Resilient tire.

1,356,476—To Maximilian Charles Schweinert, West Hoboken, N. J. Cap for tire-valves.

1,356,495—To Winfield Scott, Akron, Ohio, assignor to Goodyear Tire & Rubber Co. Vulcanized caoutchouc and art of producing the same.

1,356,504—To Phillip O. Sampson, Hornell, N. Y., assignor of one-half to John D. Wheeler, Hornell, N. Y. Tire opening and holding tool.

Issued October 26, 1920

1,356,537—To Joseph N. McFate, Phoenix, Ariz. Tire.

1,356,549—To Ferdinand Neubauer, Cleveland, Ohio. Rubber-cushioned heel.

1,356,597—To Carlous T. Byerley, Kansas City, Mo. Retreading-vulcanizer.

1,356,662—To Louis A. Sherman, Kansas City, Mo., assignor of one-fourth to Harry E. Sherman and one-half to O. K. Herndon, Kansas City, Mo. Vulcanizing material containing package.

1,356,691—To David R. Bowen and Carl F. Schnuck, Ansonia, Conn., assignors to Farrel Foundry & Machine Co., Ansonia, Conn. Rubber-mixer.

1,356,702—To Karl J. Ekedahl, Cicero, Ill. Tire-protector.

1,356,721—To Frank L. Johnson, Akron, Ohio. Collapsible tire-core.

1,356,783—To John McI. Ogilvie, Toronto, Ontario, Canada. Rubber fabric.

1,356,961—To Hugh Bullock, Andover, Mass., assignor to Converse Rubber Shoe Co., Malden, Mass. Footwear and method of making the same.

1,357,009—To William H. Thorpe, Mount Vernon, N. Y. Tire-inflation signal.

1,357,098—To Frank L. Kryder, Akron, Ohio. Cord tire.

1,357,144—To James Robert Brown, Halls, Tenn. Demountable rim.

1,357,157—To Willard E. Everett, Berkeley Springs, W. Va. Tire protector.

Issued November 2, 1920

1,357,352—To Ferdinand A. Hoya, Milwaukee, Wis. Tire-tread attachment.

1,357,334—To Vaclav Mikulecky, Verdigre, Nebr. Anti-skid chain for wheel tires.

1,357,617—To William G. Crush, Muskegon, Okla. Method and apparatus for vulcanizing tires.

1,357,784—To Benjamin J. Levin, New York, N. Y. Connected-blow-out patch.

1,357,822—To William J. Radcliffe, Williamsfield, Ill. Rim-tool.

1,357,845—To Austin H. Claessen, Ipoh, Perak, Federated Malay States. Process for the utilization of bark-shavings from rubber trees.

1,357,899—To Charles Rasmussen, Racine, Wis., assignor one-half to Ralph T. Ingalls, Racine, Wis. Tire-cutting machine.

Issued November 9, 1920

1,357,948—To David R. Bowen, Ansonia, Conn. and Carl F. Schnuck, New Haven, Conn., assignors to Farrel Foundry & Machine Co., Ansonia, Conn. Machine for treating rubber and similar material.

1,357,984—To Samuel J. Hurwitz, Youngstown, Ohio. Vulcanizer.

1,358,019—To Lester H. Robinson, Aurora, Ill. Vehicl-tire clip.

1,358,120—To Clyde L. Smith and Emmett S. Webster, South Bend, Ind., assignors to Smith One Heat System, South Bend, Ind. Tire-vulcanizing mold.

1,358,124—To Herbert R. Stratford, Cleveland, Ohio. Apparatus for and method of making rubber tubes.

1,358,184—To Henry G. Voight, New Haven, Conn. Tire-lock.

1,358,289—To Frank A. Cigol, Paterson, N. J. Apparatus for forming hollow articles of rubber.

1,358,308—To George E. Golmore, Cleveland, Ohio. Resilient wheel-tire.

1,358,336—To William P. Rylander, San Marcos, Texas. Tire-tool.

1,358,410—To Edward E. Bull, Whitwell, Tenn. Automobile tire.

1,358,524—To Jowel Cecil Cooper, Hempstead, Texas. Means for automatically inflating pneumatic tires.

1,358,566—To William A. Michero, Fort Worth, Texas. Automobile-tire.

1,358,590—To John M. Sievert, Sherman, S. D. Anti-skid attachment for wheels.

1,358,649—To Moses F. Patton, Tuscaloosa, Ala., assignor to A. Schrader's Son., Inc., Brooklyn, N. Y. Dust-cap for valve stems.

1,358,671—To Wilbur F. Bales, Slater, Mo. Resilient tire.

Cotton Crop Estimate

A. Norden & Co., New York, have issued the following estimate of the cotton crop of 1920-21, running bales, two round bales counted as one, and exclusive of linters:

North Carolina	850,000 Bales
South Carolina	1,400,000 Bales
Georgia	1,600,000 Bales
Alabama	800,000 Bales
Mississippi	900,000 Bales
Louisiana	450,000 Bales
Texas	3,950,000 Bales
Oklahoma	1,250,000 Bales
Arkansas	1,100,000 Bales
Tennessee	350,000 Bales
Sundries	350,000 Bales
Total	**13,000,000 Bales**